

## DIFFERENCES IN EDUCATIONAL READINESS

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A study of the differences in language development, perceptual skills and behaviour in a group of Tasmanian children when they entered kindergarten.

by

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I hereby certify that this thesis contains no material which has been accepted for the award of any other degree or diploma in any university, and that, to the best of my knowledge and belief, the thesis contains no copy or paraphrase of material previously published or written by another person, except when due reference is made in the text of the thesis.

*h. B. ...*

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## ABSTRACT

Fifty kindergarten children were examined in an attempt to compare their educational readiness. There were 19 girls and 31 boys and their average age was  $5\frac{1}{2}$  years. Although not strictly controlled, their socio-economic background was considered to be working class. The Boehm Test of Basic Concepts (BTBC) and the Draw-a-Man Test were used. As well, teachers and parents rated the children on the following characteristics: hyperactivity and distractibility, articulated speech, auditory perception, visual motor co-ordination, laterality, behaviour considered normal, behaviour considered apathetic and withdrawn and behaviour considered angry and defiant.

The results showed that certain physical, intellectual, emotional and social characteristics considered relevant to early educational success exist in some kindergarten children and not in others. Girls had more of the component skills considered necessary than did boys. They scored significantly higher on the BTBC and were seen by teachers and parents as having better articulated speech. Boys were rated by teachers as being more apathetic and withdrawn than girls. Although results for other characteristics did not reach statistical significance, there was a consistent trend in favour of girls.

There was a higher incidence of left-handedness in boys and significantly more boys who were neither clearly right- nor left-handed. The articulated speech

of right-handed boys was seen by the teachers as being better than that of the left-handed and 'undecided' boys.

Children who scored high on the BTBC were more likely to score higher on the Draw-a-Man Test and be considered by the teachers to have more normal behaviour than did low scorers. Conversely, low scorers on the BTBC were more likely to have poor auditory perception and visual motor co-ordination, be more hyperactive (boys only) and apathetic and withdrawn (girls only) than did high scorers. There was no relationship between the BTBC and angry and defiant behaviour for either sex. It was proposed that general intelligence and/or developmental stages accounted for the correlations.

The study was confined to group differences and did not analyse the results of individual children.

Parent' and teachers' ratings agreed on children who had 'normal' behaviour but not on those who had maladaptive behaviour. When children with either type of extreme behaviour were grouped together, there was agreement.

Implications for education regarding the importance of individual differences in readiness for formal school work were discussed.

## INTRODUCTION

## CHAPTER 1

## The reason for this study

In my work as a psychologist with the Tasmanian Education Department, I found that the most common cause for referral of primary school children was reading retardation. Further enquiry usually brought to light failure in written work and sometimes problems in mathematics and classroom behaviour.

In many cases, an individual intelligence test (for which no reading was required) showed that the child was of low intelligence and was functioning at or near the capacity of his overall mental ability. However, just as often, or so it seemed, the child's reading ability was considerably below his general learning ability.

As a psychologist, I readily accepted that no two children necessarily make the same response to any situation. They bring to the classroom such variety in terms of inherited neurological differences, physical makeup and maturation, emotional stability, home background and experiences with other children and adults that it is perhaps surprising that we find any similarities at all in their performance in school. Nevertheless, I was the end person in the line of those making decisions about some children's educational programme and had to attempt to find ways of eliminating the effects of some of the differences.

I found that general intelligence was not a necessary determinant for either reading or spelling success. Some children, usually girls who had relatively low intelligence could read fluently, though often without comprehension of the subject matter. Likewise with spelling. One girl who later moved to a school for the intellectually retarded, could spell almost any word put to her but could not read it back.

I was particularly concerned at the number of boys who were failing to achieve literacy, even at the high school level. I could not accept simply 'dyslexia' (inferring neurological deficits) in such large numbers although that diagnosis was popular at the time - and perhaps still is.

If linguistic and cultural deprivation, sensory defects, intellectual retardation and poor teaching, the commonly accepted causes of reading failure, were operating, why were there fewer girls failing? I knew that previous research had shown girls to be ahead in physical maturation, language development and school achievement. But why were they ahead? My own observations had shown that girls had more of the non-intellectual characteristics considered to facilitate achievement in the classroom. They were usually more anxious to please, less restless and often enjoyed books more, even before they could read them.

I became very aware that most children retarded in reading after the end of Grade II (and sometimes earlier) developed what my colleagues and I referred to



as the 'failure syndrome'. Although the 'failure syndrome' varied somewhat from child to child, it generally involved poor self-concept and self-worth, lack of self-confidence, persistent anticipation of failure, self-defeat, apparent indifference to the value of achievement in school work and a large repertoire of ways of avoiding reading and writing. A second year high school boy distracted me from the task of teaching <sup>him</sup> to read 5 times in about as many minutes - and I was 'on guard' for such distractions! Sometimes behaviour in the classroom takes the form of blatant attention-seeking, often disruptive. Others withdraw, at first in the classroom, and if the problem continues, they may become generally socially maladjusted. They come to see their reading failure as the cause of all their problems. I once asked a 10 year old boy, notoriously poor at sport, how he liked the school to which he had recently transferred and he told me that he did not like it; he was adamant that they would not allow him to play in the First cricket team because he was not good at reading.

These children are often described by inexperienced teachers as lazy or as 'not trying'. The very inexperienced will instance the number of times they have avoided reading as proof of this!

It seemed to me that the 'failure syndrome' was the result of long term failure and persistent frustration.

Another frequently observed undesirable side-effect of years of reading failure is the establishment of bad reading habits - guessing, substituting,

looking only at first or end letters.

I found both the 'failure syndrome' and the bad habits very resistant to treatment. Attempts at their removal usually had to take priority in any remedial reading programme.

I speculated on ways and means of avoiding the need for the development of compensatory mechanisms. But first I had to know much more about the factors involved in reading. I decided that non-cognitive factors were of considerable importance and that language generally was probably the most important single factor. I wondered if we were inducing failure in boys by treating them the same as girls when in fact many of them were up to one year 'younger', at least in terms of physical maturation, when they started school. Had the earlier age for starting formal school work put boys more 'at risk' because it increased the number who were not ready for what John Steinbeck, in referring to reading, describes as 'the most difficult and revolutionary thing that happens to the human brain'? Are some boys linguistically, physiologically, perceptually and emotionally unready for the reading instruction they receive in Grades I and II? If so, they probably do not receive adequate reading instruction at a time when they can use it.

I wondered if even kindergarten activities involved more fine motor co-ordination than some children, again especially boys, are capable of? If so, have some commenced their 'failure syndrome' before they even get to Grade I.

I considered that the answer to many of my questions would be found in the capacities of the children when they entered school. This study represents an attempt to look at some of the characteristics of children at that time. The path before me was well-trodden but I wanted to know how a group of children in my own area would respond and compare on the things I thought were relevant to educational readiness. In some cases, the children would be the younger brothers and sisters of the children referred to me as failing in school. From the results I hoped at least to know if I were asking the right questions.

## CHAPTER 2

### Review of previous research findings

Since 5 year olds are still very much in the 'becoming' stage, their abilities and behaviour vary a great deal for reasons attributable to individual developmental rates.

### PHYSICAL DEVELOPMENT

That children vary greatly in the age at which they reach puberty is clearly observable because of overt physiological changes. Less obvious differences in rate of growth occur at all ages, even in foetal life (Tanner, 1970).

A common indicator of physiological maturity is the degree of ossification of the bones of the body. The sequence of stages of ossification is constant from one child to another and the stage can be distinguished by X-ray. Children who have advanced skeletal development reach puberty earlier than those with a slow rate and children tend to be consistently fast or slow developers particularly after the age of 3 years (Anastasi, 1958; Tanner, 1970).

Boys are, on the average, behind girls in the rate of skeletal development, the retardation beginning in foetal life. At birth boys are from 2 to 4 weeks behind and remain at about 80 percent of the skeletal age of girls of the same chronological age until maturity is reached (Anastasi, 1958; Breckenridge and Vincent, 1965; Rutter, Tizard and Whitmore, 1970; Tanner, 1963; Terman and Tyler, 1954).

Being an early or later developer has an effect on the emotional and social life of the child. Every-day observation confirms that the children at each extreme have a special set of environmental factors to which they must adjust. For example, in the rough and tumble world of the school playground, early developers often gain success and prestige denied to the slower developing boys. Although there is no difference in height or physical prowess between early and late developers when both have finished growing (Tanner, 1970) the early relationship between the boys will influence the development of the self-concept and attitudes, many of which will be carried to adulthood.

An early developer has potential problems also. For example, after years of being the best footballer or runner in the school, he may be gradually overtaken by the 'average' developers. Adjusting to his new reduced status is at best uncomfortable and for those who have few other abilities it can be devastating.

A certain degree of motor co-ordination facilitates educational readiness and success. Gross body control and the development of muscles which control fine motor skills develop in an orderly pattern, both commencing in the early months of life (Bakwin and Bakwin, 1972; Breckenridge and Vincent, 1965). There are considerable individual differences in the rate of motor development and these probably parallel the rate of physical maturation (Breckenridge and Vincent; 1965; Sheppard, 1972).

Children who enter Grade I without sufficient fine motor control to write or, in some cases, to focus both eyes readily on a small target are at a disadvantage.

Tanner (1970) states that girls are ahead of boys in motor development but Anastasi (1958) considers this acceleration applies only to fine motor movements. She proposes that the male superiority in gross body movements from infancy may be the result of such factors as greater muscular strength, bodily size and proportions. She attributes the earlier fine motor control of girls to accelerated development.

The relationship between physiological maturation and intellectual functioning has been extensively researched (Anastasi, 1958; Tanner 1963) but the results are too complex to be explained by a simple one to one correspondence. Unlike the bones of the body, the physical growth of the brain cannot be measured by X-ray. Most of our knowledge of the development of mental functioning comes from observation of skills as they unfold in the growing infant and child. In such a situation it becomes almost impossible to control for the effect of environment. However, it is certain that the brain undergoes a developmental process from early foetal life until at least adolescence and perhaps later (Tanner, 1970).

The theory of the systematic and sequential unfolding of cognitive abilities in children proposed by Piaget (1963) substantiates the view that there are hierarchical factors involved in the cerebral development. From this it follows that individual children will differ in developmental rates. This would vary the time at

which children would be capable of grasping certain concepts and probably carry over to differences in intelligence tests results. (If this is so, and cerebral development does follow body development, we would expect Piaget or his co-workers to have found differences in abilities of boys and girls as groups. The writer could find no references to the reporting of such findings. Perhaps the intensive work done with small numbers of children did not provide an opportunity for observation of the differences, if any.)

Tanner (1963) summarizes research in Britain and the United States of America showing a correlation between physical maturation and mental ability. Children who are advanced physiologically tend to score higher on intelligence tests and tests of educational achievement. The difference is not great but consistent and occurs as early as  $6\frac{1}{2}$  years.\* The evidence as to whether differences disappear completely as each reach maturity is not clear. Anastasi (1958) presumes that they do but Tanner (1970) cites research that indicates a correlation between early developers and adult success and stability in business and emotional life. Perhaps differences are due more to self-image and other non-cognitive factors than to intelligence.

#### LANGUAGE DEVELOPMENT

Rutter claims that language more than any other characteristic distinguishes man from animals.

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\*Writing in Great Britain at a time when the 11-plus examination was vital for a child's educational future, Tanner raised the possibility of considering maturation rate as a factor in the pass mark. In one sample, early maturers had better test papers and better behaviour reports from teachers than did late maturers.

The whole concept of language and communication generally among all species of animals is one which is receiving a great deal of attention recently. Regardless of what (or if) final conclusions are reached, language can be regarded as one of the main features of what it means to be human and from this it follows that any retardation in language development will have far reaching consequences for other areas of development.

Language is a general term encompassing a number of communication skills. In particular, distinction should be made between articulated speech and some other aspects of language. 'Articulated speech' refers to the motor activity involved in the delivery of sounds, to the actual mechanical production of words. Using this definition, speech disorders include articulation difficulties caused by impairment or delayed development of certain muscles, shape of the mouth or tongue, problems of fluency caused by stammering and problems of phonation and resonance. The term 'language' is wider and refers more to abilities at the cognitive and interpretative level. The ability to form verbal concepts, to understand what others say, to organise thoughts logically and express them in the conventions of one's culture are examples of language (Gibbs, 1963; Griffiths, 1971; Rutter, 1970).

The motor activity (articulated speech) and the cognitive and interpretative aspects of language combine in spoken language, the combination providing the easiest means of communication of thoughts, ideas, and feeling between people.



In tracing the development of language in children Rutter (1970) refers to the extreme handicaps of those children who fail to develop 'inner language', that is, the capacity to classify and manipulate sensory stimulation into meaningful perceptions in an attempt to stabilize and organise the environment. He suggests that a defect in this level of language might be the underlying cause of autism.

The position regarding the causation of language difficulties is not yet clear (Klasen, 1972) probably because of the complexity of the problem. Both physiological and environmental factors are involved, sometimes separately but probably more often in interaction (Breckenridge and Vincent, 1965; Mittler, 1970). Newland (in Breckenridge and Vincent) sees language development as a function of the overall mental development of the child.

The most obvious cause of language retardation is deafness. Diagnosis of deafness or partial deafness is not always simple. Very young children, emotionally disturbed or extremely intellectually retarded children may not be able to respond adequately for a reliable assessment (Reed, 1970). Reed points out that basic screening tests of hearing often miss children with high frequency loss, a cause of inability to understand speech because many consonants are not heard.

Some children follow an orderly pattern of language development but do so at a much slower rate than is usual. Others have a disordered pattern with weaknesses in specific areas (Mittler, 1970). Attempts to separate

these two areas in a practical situation are often not feasible because knowledge of the developmental stages of language is inadequate (Bangs, 1968). Depending upon the degree of handicap, they have equal potential for repercussions for intellectual and social development and education achievement (Klasen, 1972; Mittler, 1970).

Bakwin and Bakwin (1972) claim that mental retardation is the most frequent cause of delayed or disordered language development, accounting for half the cases. Mittler (1970), however, points out that there is no necessary association between mental retardation and language disability. While accepting that in many children there will be a common underlying cause for both handicaps, he warns against a too hasty assessment, especially in view of the heavy verbal loading in most of the commonly used tests of intelligence.

Gibbs (1963) and Breckenridge and Vincent (1965) believe that traumatic experiences and emotional disturbance can produce retardation in language development. In assessment of individual children for any developmental disorder, the problem of unravelling primary and secondary causes is great. This is particularly so in cases where emotional problems are involved (Rutter, 1970).

Children from homes where the quality and quantity of language are generally poor are prone to language retardation (Davie, Butler and Goldstein, 1972; Mussen, Conger and Kagan, 1963; Rohwer, 1970). Bernstein's approach to the importance of language commonly used by different social classes suggests a

reason why environmental factors effect language development. He distinguishes (in Ravenette, 1970) two major language codes, 'restricted' and 'elaborated'. Briefly, the 'restricted' code is an abbreviated form of language used in close-knit groups. The 'elaborated' code is more complex, uses adjectives and adverbs more freely, has accurate grammar and syntax and is used in wider social contexts when the speaker has to make himself understood by listeners from varying backgrounds. Bernstein claims that middle class families use both codes but that working class families tend to use the 'restricted' code only and that this leads to poverty of language among working class children.

Ravenette (1970) summarizes his own studies and those of Deutsch and Tamplin, the results of which corroborate Bernstein's conclusions. Throughout the age range from young children to adolescents, they found that language development and verbal intelligence were closely related to social class, the working class children obtaining the poorest results.

Defects of articulation alone usually have a physiological basis (Klasen, 1972) but an inadequate or defective model and exposure to little spoken language will deprive the child of the opportunity for desirable imitation (Breckenridge and Vincent, 1965).

Language development and intelligence: Language retardation at any level has serious implications for the intellectual development of the child. The early behaviourist argument that words were necessary in order to think has been disproved by studies of those who are

deaf (Rutter, 1970). However, that words greatly facilitate such intellectual activities as classifying, remembering, reasoning and problem solving has been equally well established (Breckenridge and Vincent, 1965; McNeill, 1970; Mussen et. al., 1963; Rutter, 1970).

Mittler (1970) describes language as the 'cornerstone of most intellectual operations' (p. 611). Bakwin and Bakwin (1972) summarize findings that show a significant correlation between spoken language in pre-school children and later intelligence; and point out that since language is a primary tool in the thinking processes, early development of language will facilitate the development of abstract thinking. The work of Bernstein and others referred to above provides evidence of the relationship between language and verbal intelligence. After language studies with pre-school children, Bayley (1970) concluded that language was a tool which facilitated the development of abstract thought and that the earlier language was established the greater the opportunity the child had to develop his intellectual potential.

Rutter (1970) cites experiments in which it was found that children were helped in learning a task if they spoke out aloud what they had to do. It was not the words as labels only that facilitated the learning process. The words acted as a 'medium for the transmission and development of ideas' (p. 3). Piaget (in Gibbs, 1963) points out that children under 7 have difficulty in thinking without spoken language.

To those adults who are verbally orientated, it is

obvious that words aid thinking and in fact the prospect of thinking without words is unthinkable! Nevertheless, studies of deaf children (Reed, 1970; Rutter, 1970) show that given rich gestural environment in early childhood and wide sensory experience in areas other than hearing, they develop normal or above normal intelligence. However, deprived of the easy communication of spoken language, more effort needs to be expended by themselves, their parents and teachers if they are to reach their innate potential.

Language in school. Retardation in language development has wide implications for educational readiness and success. Schools are very language orientated institutions. Even in kindergarten, the child with a language deficit will be at a disadvantage. Spoken language is the most important means of communication between the teacher and pupils and, at least by the age of 4 years, between the pupils themselves (Gibbs, 1963).

A child who has a lack in language skills including vocabulary and verbal concepts will be deprived of the opportunity to benefit from much of his kindergarten experience because of the poverty of concepts upon which to build new experiences (Bangs, 1968). For example, if his passive vocabulary (that is, the language he understands) is small, he will not be able to follow instructions adequately and thus lose the value of many of the pre-academic activities; a very real case of 'the rich get richer and the poor get poorer'.

Language and reading. Reading is one form of language: written language. It is also a basic skill essential

for success in present day education.

The mechanics of reading require the mastery of a number of sub-skills, for example visual and auditory perception, spatial orientation, auditory and visual memory. However, in order to understand the meaning of the written symbols, the child must have language skills. Thus children with language impairment will probably be delayed in learning to read and frequently be retarded in long term achievement in reading and overall educational attainment (Bangs, 1968; Breckenridge and Vincent, 1965; Rutter, 1970).

Those most likely to have reading difficulties are those who have generalized language problems: poor vocabulary, poor concept development, poor verbal reasoning ability and poor articulation (Ilg, 1964; Mittler, 1970; Rutter, 1970). Most material written for use in schools even in the early grades is in Bernstein's 'elaborated' code. Thus those with a background of the 'restricted' code will frequently commence reading with a disadvantage. Their spoken language will not correspond with the written language they are trying to decipher.

Reporting on the Edinburgh Language and Reading Project, Mittler (1970) indicates that children who spoke late were at risk for severe difficulties in reading even though they had made reasonable progress in all aspects of spoken language. Elkins (1973) claims that adequate spoken language underlies success in reading. His research has led him to consider that it is

probably language in the widest sense defined above and not articulation difficulties which is the more vital factor in reading failure. Rutter (1970) corroborates this view in his summary of research which shows that reading and general education difficulties of children with articulation defects alone are less persistent and less widespread. (Unfortunately, most writers do not make a distinction between articulated speech defects and delayed or impaired language development.)

Although perhaps of less gravity, the findings of a significant correlation between poor articulation and reading failure are common (Klasen, 1972; Pick and Pick, 1970). Deutsch (in Pick and Pick) considers that the common factor in both problems (poor articulation and poor reading achievement) is caused by the child's inability to discriminate some speech sounds.

Klasen (1972) summarizes research by Wepman, Myklebust, Money, Durrell and Murphy which substantiates the notion that accurate auditory perception is amongst the most important components of the reading sub-skills. Schonell (1959) considered a weakness in auditory perception of sounds such a severe handicap that he postulated it as a primary cause of retardation in reading.

In a survey of 1,067 Northern Tasmanian children, Farrar (undated) found that children who had articulation defects (as subjectively assessed by her as part of a school medical examination) when they entered school had a high incidence of reading retardation 5 years later ( $p < .001$ ).

In a study of first-grade children, Mussen et.al. (1963) found that difficulties in articulation of speech were associated with both physical and socialization problems. When compared with a group of normal children of the same age, sex, IQ and social class, the children with speech defects had more difficulties at birth, more physical diseases and were later in walking and talking. They were weaned and toilet trained earlier than the control group and therefore were probably more subject to socialization pressures. They were behind in formal school work. (The concurrence of both physical difficulties and socialization pressures occurring in these children strengthens the contention referred to later that many educational problems are the result of cumulative hindering factors rather than isolated weaknesses.)

Language and laterality. Most literature on language makes reference to the relationship between left-handedness and language disability, including reading.

McNeill (1970) points out that man alone of the animals has developed a dominant cerebral hemisphere. In most people it is the left hemisphere which is dominant and this controls the right side of the body. Thus the right hand becomes dominant for manual tasks.

In almost all people language functions are controlled mainly by the left hemisphere (Geschwind, 1972; McNeil and Hamre, 1974). McNeil and Hamre, in reviewing recent neurological studies, concluded that the left hemisphere is dominant for language for almost all right-handers and two-thirds of left-handers.



However, there is some evidence that left-handers have more facility for speech in the right hemisphere than do right-handers. Geschwind reports that left-handed people have milder disorders of language after damage to the speech regions of the left hemisphere. He also points out that right-handers with a strong family history of left-handedness show better speech recovery after injury to the speech centres than do those without such a history. This then leads to a possible explanation of the relevance of cerebral dominance to language disabilities in left-handers: since their speech functions are somewhat divided are they less skilled?

Although left-handers as a group have less language ability than right-handers, the group who have the greatest problem are those who lack firm unilateral dominance, whether it be left-sided or right-sided (Burt, 1946; Klasen, 1972; Kovac, 1972; Newton, 1971; Vernon, 1971).

The incidence of left-handedness is estimated to be from 5 to 12 per cent (Burt, 1946; Clark, 1970). Its manifestation is thought to be increasing due to greater social acceptance of left-handedness at home and at school (Clark, 1970).

There is a higher incidence of left-handedness among boys than girls (Clark, 1970; Breckenridge and Vincent, 1965). As well many more boys than girls establish manual laterality late (Annett, 1974; Bakwin and Bakwin, 1972; Klasen, 1972). No doubt some of this is accounted for by the overall slower developmental rate of boys.

The English written language is very rigid in its directional demands and unless left-handers are given some training in left to right directionality in reading and writing they may develop problems. Bakwin and Bakwin (1972) point out that while left-handed children are now permitted to use their left-hand for writing they are not often taught to use it. Yet, right-handed children, who perhaps need it less, are.

Language and social and emotional development. Any aspect of language difficulty may be expected to affect intellectual development. Less obvious may be the effects on social and emotional development. Gibbs (1963) describes the frustration shown by children who cannot make themselves understood by others. Rutter (1970) points out that such frustration may lead to either withdrawn or anti-social behaviour. Reviewing studies conducted in Great Britain during the 1960's Rutter claims that most studies of emotionally disturbed children have found a significant number of language disorders. He quotes Solomon's study which found that mothers saw their children with articulation difficulties as fearful, anxious and less able to make friends. In the Isle of Wight study Rutter, et. al. (1970) found that children with language impairment had a high incidence of neurotic and psychotic disorders. This study also found that there was a relationship between reading failure and anti-social behaviour, particularly in boys. They emphasise that the relationship is a complex one and frequently an indirect rather

than a direct one. Rutter (1970) gives 4 different ways in which language retardation indirectly leads to social and emotional problems: effects arising from education failure; effects of communication failure; lack of social integration; being teased and rejected by other children.

Friedlander, Wetstone and McPeck (1974) believe that classroom observation will confirm that children who have moderate to severe language problems often have emotional or social problems. In an attempt to find a common factor involving language and behaviour problems, they studied the listening ability of a group of children aged from 4 to 6 years. They found that children with moderate behaviour problems were less discriminating in a listening task than normally behaved children and those with severe behavioural problems were very poor in the task. They concluded that the disturbed children had an impairment at least in the receptive language areas.

### SEX DIFFERENCES

When asked which is the more intelligent, man or woman and he replied 'which man, which woman?', Dr. Johnson (in Anastasi, 1958) succinctly put the case against generalization in the matter of sex differences. Nevertheless, the development of psychology and the propensity of psychologists for group studies allow for certain statements on differences between boys and girls in matters considered relevant to early education.

Language: Mussen et. al. (1963) claim that girls surpass boys in all aspects of development of language: first

words, vocabulary size, complexity of sentences, and understanding of speech. They consider that some of these differences disappear at about 3 years of age. Bakwin and Bakwin (1972), say that all speech articulation defects are more frequent in boys than girls. They suggest that stammering occurs from 3 to 8 times more frequently in boys than girls.

Anastasi (1958) summarizes a large number of studies and concludes that from infancy to adulthood females are superior in language functions. She suggests that the difference may arise because of their earlier physical maturation. Developmental acceleration in the motor aspects of speech could account for the early success in articulation and this in turn may give them an advantage in all aspects of language. This is perhaps substantiated by Piaget's finding that children have difficulty in thinking without spoken language (Gibbs, 1963).

In a study of articulate speech among 2,371 Tasmanian State School children, Parker (1932) found that the ratio of boys with problems to girls with problems was almost 2:1. Although Farrar (undated) in her Northern Tasmanian Study found a greater incidence of problems among boys, the difference was not statistically significant.

In their reporting of the National Child Development Study in Great Britain, Davie et. al. (1972) state that by the age of 7 more boys than girls had articulation difficulties and more boys were attending speech therapy clinics.

Somewhat of an exception, Breckenridge and Vincent,

(1965) suggest that the sex difference in language is not as great as usually reported, and quote a study by Sampson of fluency of expression in which boys were found to be superior.

Reading. It seems to be found that girls generally have less problems learning to read than do boys. This is perhaps axiomatic if we accept that girls have superior language development. Anastasi (1958), Bakwin and Bakwin (1972), Davie et. al. (1972), Farrar (undated), Klasen, 1972 and Rutter et. al. (1970) claim that girls master the skills involved in reading more readily than boys and maintain their advantage at least until the end of primary school.

In a study of reading retardation of 2,115 Victorian Grade II children Farmer (1974) found that on a reading comprehension test, the ratio of boys to girls who were considered to be low reading achievers was almost 2:1. When children with commonly accepted handicaps to reading were eliminated, (low socio-economic status, migrant background, medical conditions, low intelligence, certain language problems and emotional instability) the ratio of boys to girls left was 4:1.

In the norming of his Silent Reading Test B Schonell (1956) found such differences in achievement in reading between boys and girls that he prepared separate norms. At the same chronological age, girls scored higher than boys. Therefore, the raw score for girls is higher than for boys for the same reading age.

Intelligence. The results on intelligence tests when expressed as an IQ are the same for boys and girls (Mussen et.al., 1969; Rutter et.al., 1970; Terman and Tyler, 1954). However, many studies have found that there are differences in specific areas but as Terman and Tyler point out, there is no satisfactory way of deciding which skills are more valid indicators of mental abilities. Girls as a group do better on tests of verbal skills and boys on arithmetical and spatial problems (Anastasi, 1958; Hollingworth, 1961; Mussen et.al., 1969).

Anastasi found that as well as being superior on verbal tests of intelligence, girls did better in tests of ordered sequential and rote memory, and hypothesised that the superiority is attributable to the role of verbal language in the storage and recall of most types of material.

Hollingworth (1961) points out that girls with lower intelligence fit into the existing educational, social and economic order better than boys with the same intellectual potential. No doubt this is due in part to social attitudes and expectancy directed towards girls; for example, less is expected of them in terms of money earning capacity. In education the readier acceptability is probably due to differences between boys and girls in non-intellectual factors. Bakwin and Bakwin (1972) propose that their greater conformity to classroom rules and their more compliant and co-operative attitude works in favour of girls in school, gaining them better achievement scores at all levels. Boys show

more direct aggression from pre-school to adulthood (Mischel, 1970). Anastasi (1958) points out that from early life, girls are more socially orientated, perhaps as an outcome of their accelerated language development. This greater socialization tends to direct them toward behaviour considered valuable in the classroom; for example, interest in appearance and manners and concern for others.

These findings were confirmed in the Isle of Wight study. Intellectual retardation on general intelligence tests had approximately equal sex ratio, but the educational failure of the lower ability boys was much greater than that of the lower ability girls. This was attributed to the high language content in school work as well as to non-intellectual factors (Rutter, et.al., 1970). In the study of a group of Tasmanian children, Parker (1932) found the same pattern and came to similar conclusions.

Rutter et.al. point out that both American and British studies have consistently found that educational difficulties are more common among boys than girls, the difference being particularly marked in those subjects involving any form of language.

At the beginning of the 1974 school year there were 312 boys and 190 girls enrolled in schools for the intellectually and physically handicapped in Hobart.

#### SPECIFIC LEARNING DIFFICULTIES

There exists in some children such a constellation of certain language and perceptual handicaps that they

are considered to have specific learning difficulties, often referred to as 'dyslexia'. The main characteristic of the problem is the severe disparity between the child's general ability and his ability to read, write and spell (Klasen, 1972). In 1968, under the guidance of Dr. McDonald Critchley, a leading British neurologist, a Research Group of the World Federation of Neurology defined dyslexia as follows (in Manson, 1973): 'Dyslexia is a disorder in children who, despite conventional classroom experience fail to attain the language skills of reading, writing and spelling commensurate with their intellectual abilities' (p. 295). The World Federation of Neurology agreed upon a similar definition and added 'It is dependent upon fundamental cognitive disabilities which are frequently of constitutional origin' (Manson, 1973, p. 295).

The distinguishing feature between this group and other retarded readers is that a relatively specific neurological impairment or developmental lag is considered to exist (Critchley, 1971; Naidoo, 1971; Schechter, 1971; Sullivan, 1972).

Since there is a high incidence of a family history of the problem, most writers consider the neurological anomalies are more often in the nature of a developmental lag or genetic weakness than cerebral injury (Critchley, 1971; Naidoo, 1971). In a certain number of cases, however, a known brain injury can be presumed to produce the problem (Manson, 1973).

Children with specific learning difficulties very often have a history of retardation in the development



of spoken language (Klasen, 1972; Vernon, 1971). Orton (in de Hirsch, 1968) first drew attention to the high incidence of language disorders in families of children with specific learning difficulties. This early finding has been supported continually by later research (de Hirsch, 1968).

A high frequency of left-handedness is reported in the children and the families of dyslexics (Annett, 1974; Totten, 1974; Zangwell, in Bakwin and Bakwin, 1972).

Occuring more frequently than clear left-handedness is incomplete or delayed lateralization (Critchley, 1971; Klasen, 1972; Newton, 1971; Newton and Thomson, 1974; Vernon, 1971). There is also a finding of a higher incidence of crossed laterality (for example, right-eyed, left-handed) than is found in normal readers (Critchley, 1971; Farrar, undated; Klasen, 1972).

Perhaps some disturbance in the establishment of cerebral dominance underlies both the weakness in lateral preference and the inability to acquire a sense of orientation in space, for example, distinguishing left from right and up from down. Hermann (in Naidoo, 1971) suggests that the directional confusion underlies the reversals of words and letters characteristic of the dyslexic. In the worst cases mirror writing is produced and in less severe cases single letters are reversed ('b' for 'd') or inverted ('u' for 'n'). In reading, words are often read from right to left, for example, the reading of 'was' for 'saw' is common practice. Schonell (1959) claims this weakness adds weight to the theory that the basis of the problem is delayed

maturation. He points out that the errors made are markedly similar to those made by younger children. Such confusions suggest that the perceptual processes are at the level of children 5 to 6 years old.

Other problems often found are hyperactivity, poor motor co-ordination, poor sequencing ability, poor visual and auditory memory (Francis-Williams, 1970; Naidoo, 1971; Vernon, 1971).

Reports of the incidence of specific learning difficulties among children vary greatly and seem to depend upon the criteria used. Klasen (1972) found that estimates of prevalence varied from 2 to 20 per cent. Vernon (1971) quotes variations in estimates from 0.3 per cent to 10 per cent. Boys are much more likely to be affected than girls (Critchley, 1971; Klasen, 1972; Manson, 1973).

Neurologists, particularly Critchley (in Francis-Williams, 1970) have tended to regard dyslexia as an exclusively neurological syndrome somewhat separate from other aspects of the child's strengths and weaknesses. However, other writers, both psychologists and physicians, see the problem as part of a pattern of abilities and disabilities, the nature of which differs from child to child (McLeod, 1966). The British Department of Education and Science Report on Children with Specific Reading Difficulties (1972) took the view that there is 'a continuum spanning the whole range of reading abilities from those of the most fluent readers to those with the most severe difficulties' (p.3).

The solution to the problem of whether dyslexia is a completely separate entity or not is obscured by the

differences in characteristics found by researchers. Critchley (1971) says/<sup>that</sup> although delayed speech occurs in some cases 'in the majority of dyslexics, speech develops at a normal age and is clear from the start' (p. 10). Hallgren (in Bakwin and Bakwin, 1972) considers there is a direct association between defects in articulation and dyslexia in boys (but not in girls). Elkins (1973) believes spoken language generally is of primary importance in learning to read. Klasen (1972) found a high incidence (62%) of articulation difficulties or delayed speech in her study and summarizes previous studies which had similar findings. She points out that among dyslexics, boys have a significantly higher incidence of speech problems than girls.

Although most authors (some cited above) list confused laterality as a common characteristic in children with specific learning difficulties, de Hirsch (in Vernon, 1971) found in a longitudinal study no such bias. Bakwin and Bakwin (1972) claim that many children with dyslexia show no weakness in lateral dominance.

Crosby and Liston (in Vernon, 1971) consider the most common cause of dyslexia is impaired visual perception and memory whereas Wepman, Myklebust, Money, Durrell and Murphy (in Klasen, 1972) and Schonell (1959) claim that impairment of auditory perception and memory is the most common cause.

Probably many of these characteristics appear in various combinations in the individual severely retarded reader and are impinged upon for good or bad by the socio-economic and linguistic background, non-cognitive

factors (discussed below) and type and quality of reading instruction. The overall intelligence of the child is a factor (Vernon, 1971). Those with superior intelligence will generally have more strengths for devising alternative strategies for learning than those of average intelligence. As well, their wider range of general interests and higher vocational expectations frequently make the skill of reading more valuable to them and this acts as a motivating force in the great effort required to master written language.

Although children with below average intelligence are excluded by definition from the specific learning difficulty group, (their problem being of a general nature), many of them have the same impeding characteristics referred to above. Their reading retardation is usually very severe but their plight is often not so great as that of the intelligent child because they experience less discrepancy between expectation and achievement.

#### NON-COGNITIVE FACTORS

Learning to read, write and spell is not merely a perceptual and intellectual process. How well these faculties are applied to the task depends on certain non-cognitive factors such as emotional and social adjustment, personality traits, interest and motivation.

In some cases non-cognitive factors are considered to be the primary cause of the problem and in others they arise as a response to failure. However, in individual cases it is frequently very difficult to unravel the primary from the secondary causes. In many cases, it seems that it is the interaction from the beginning of

both cognitive and non-cognitive factors which causes the problem.

Emotional maladjustment. There is no doubt that educational retardation and emotional maladjustment are frequently found together (Burt, 1946; Davie et.al., 1972; de Hirsch, 1968; Francis-Williams, 1970; Klasen, 1972).

In the British National Child Development Study there was a high positive relationship between maladjustment and reading retardation and this became very significant as the criterion of backwardness was made more stringent. Fifty-four per cent of the virtual non-readers (at 7 years of age) were assessed by teachers as having some degree of emotional maladjustment. In reporting this, Davie et.al. (1972) considered that except in a few cases the children would not have been at school long enough to have developed maladjustment purely as an outcome of failure at school and claimed this strongly suggested maladjustment as a primary cause or accompaniment of reading retardation rather than the result of it.

Another British study 'Health of the School Child' cited by Francis-Williams (1970) included primary emotional disturbance as one of the most common factors in reading failure. Vernon (1971) states that emotional disorders may aggravate the effects of a neurological tendency toward dyslexia.

Emotional maladjustment manifests itself in many ways: anxiety, depression, restlessness, aggression, and various defensive reactions. Of these, anxiety particularly is capable of causing reading failure. Minor

anxiety facilitates learning (Klasen, 1972) but anxiety to the extent where other feelings are overridden is a deterrent to concentration and prolonged effort and thus to learning to read (Mussen et.al., 1963; Rosen and Gregory, 1965).

In her study of 500 children aged from 6 to 18 years with severe reading retardation Klasen (1972) found that 65 per cent were chronically anxious. However, like others she was unable to ascertain whether the anxiety was the cause of the problem or whether the inability to learn to read had created the anxiety. Anxiety was the most frequently observed characteristic in Klasen's study.

There is often a fine line between 'maladjustment' and 'individual differences'. Some characteristics discussed below will be treated as non-pathological personality traits. However, most of them, in extreme form would constitute maladjustment.

Personality traits. In studying the temperamental characteristics which seem to allow the child to best use opportunities offered at school, Kohn and Rosman (1972b, 1973) found that initiative, assertiveness, curiosity and the ability to cope with the environment facilitated success. Their study involved the assessment of children when they entered school and again in Grade II. Children who were assessed upon entry as being apathetic and withdrawn had lower scores on achievement tests given in Grade II than did those without these characteristics. Angry and defiant behaviour, also

assessed upon entry, was not correlated with poor achievement in Grade II for boys but it was for girls.

Silverman (in Kohn and Rosman, 1972b) found that passive and withdrawn children in preschool scored lower on achievement tests given in Grade II.

Kobi (in Klasen, 1972) states that about 70 per cent of the retarded readers he has dealt with tend to be withdrawn. Klasen's study found a high incidence of children who were passive, expressionless, uninvolved and unresponsive.

In Klasen's study a smaller number were aggressive, though in a general and not delinquent way. Their behaviour was marked by verbal outbursts, forwardness, hostility and defiance. Klasen claims that most investigators agree that among retarded readers there is a much higher incidence of apathetic and withdrawn behaviour than aggressive behaviour.

In a study of 200 children referred to Child Guidance Clinics, Harris (1961) looked at some of the personality characteristics which discriminated retarded readers from good readers. There were 100 boys in each group. One of his findings was that 75 per cent of the poor readers were at the passive end of the passive-aggressive continuum.

Bruner (in Kohn and Rosman, 1972b) considers that the overt behaviour of the passive and apathetic child compared with the alert and curious child is less important than what is going on in the child's internal mental processes. The alert and curious group, he claims, have probably involved themselves in hypotheses testing

from an early age. The apathetic type put forth little effort to find out what is going on around them.

In a study of changes in IQ among children during early school years Mussen et.al. (1963) found that children who showed a desire to improve their knowledge of things about them and to solve problems put before them tended to have higher IQ scores at the beginning of the study and to increase their scores over a period of time.

Bakwin and Bakwin (1972) state that children who are confident and have good balance between freedom of self expression and normal restrictions have an advantage in early school success. They also say that children who are outgoing, make friends and mix easily profit from their early school experiences.

Self-reliance and independence. It is to be expected that an ability to work alone, take the initiative and persevere with a difficult problem would be necessary before a child could cope successfully with the complex task of learning to read and write, particularly if there were even minor perceptual deficits. Research supports this supposition.(Mussen et.al., 1963). In a study of young children with learning difficulties Francis-Williams (1970) found that there were significantly more dependent children than in a group of normal controls. The experimental group needed more encouragement and direction from the teacher.

One of the findings in Harris' (1961) study was that the eldest or first born boys were found almost twice as frequently in the group without reading problems.



Conversely, youngest boys were found almost twice as frequently in the group with reading problems. He accounted for this difference in terms of less reality experience, responsibility and following of rules among the younger boys. When they faced a problem in learning at school, they did not have the fortitude or habits necessary for making greater effort.

Poor concentration and hyperactivity. Inability (for whatever reason) to pay attention and concentrate on a task will have a handicapping effect on a child's ability to learn in the classroom (Bakwin and Bakwin, 1972; Huessey, 1974; Rosen and Gregory, 1965; Vernon, 1971).

Such inability often results from emotional maladjustment or minimal brain dysfunction or immaturity (Vernon, 1971). Huessey points out that in most cases the cause will not be known. At its severest, the problem can be extremely handicapping. There may be hyperactivity, marked by purposeless movement, short attention span, impulsiveness and difficulty with other children. Huessey claims that boys are more often affected than girls by a ratio of from 2.1 to 6.1, and from 10 per cent to 20 per cent of children in Grade I will have some form of this behaviour.

Immaturity. As delayed neurological development is considered one of the causes of reading backwardness, it is not surprising that general immaturity (functioning at a younger than chronological age) is often found among retarded readers. They are often described as intellectually, emotionally and socially immature (Klasen, 1972; de Hirsch, 1968).

In summary, it seems likely that educational failure, and particularly reading retardation, can be caused by a single factor if this factor is of sufficient strength. However, in most cases the problem will be the result of the coinciding in the one child of multiple factors interacting in such a way as to overwhelm his efforts to attain literacy.

## CHAPTER 3

### Aims and hypotheses

The present study examined some characteristics of a group of kindergarten children who had been at school less than 6 months and compared the relationship of certain cognitive and non-cognitive variables within the group. The study was planned on the premise that the characteristics examined and their relationship to each other were relevant to educational readiness.

Two group tests were administered. One was a test of verbal concepts and the other a non-verbal intelligence test. Teachers and parents completed behavioural check lists. Some measures had standardized norms but these were not used. The statistics were computed on the raw scores and comparisons made within the group.

Ten areas of functioning were examined: verbal concept knowledge, non-verbal intelligence, hyperactivity, articulated speech, auditory perception and visual motor co-ordination, laterality, behaviour considered normal, behaviour considered apathetic and withdrawn, behaviour considered angry and defiant.

It was hypothesised that:

- (1) girls would exceed boys on all factors considered facilitating for educational readiness and the boys exceed the girls on all factors considered inhibitory.
- (2) there would be a positive correlation between the verbal concepts test and
  - (a) normal behaviour and (b) the non-verbal intelligence test.

- (3) there would be a negative correlation between the verbal concepts test and:
  - (a) poor speech
  - (b) hyperactivity
  - (c) apathetic and withdrawn behaviour
  - (d) poor visual motor co-ordination
  - (e) poor auditory perception
- (4) poor speech would be positively correlated with auditory imperception, left-handedness, incomplete lateralization, apathetic and withdrawn behaviour and with angry and defiant behaviour.
- (5) there would be a negative correlation between apathetic and withdrawn behaviour and angry and defiant behaviour.

## METHOD

## CHAPTER 4

### Subjects

Subjects were 50 children attending Abbotsfield Infant School Kindergarten. There were 31 boys and 19 girls whose ages ranged from 5 years 3 months to 5 years 9 months. The mean age for both boys and girls when the testing commenced was 5 years 6 months. The children were spread over 3 kindergarten classes, the total enrolment of which was 70 children. The 50 used in the study were all those whose parents responded to a questionnaire. The respondent group represented approximately the same ratio of boys to girls as that in the classes (44 boys, 26 girls) and the children were evenly spread throughout the 3 classes (18, 17, 15,  $n = 50$ ).

The tests were administered and the check lists and questionnaires completed by teachers and parents during May and June, 1973.

No account was taken of the socio-economic background of the children. The Abbotsfield Infant School was considered to draw its children from a fairly homogeneous working class background. All the families of the children in the study lived in Tasmanian Government Housing Commission homes. The children had parents who were sufficiently interested and able to respond to the questionnaire.

## CHAPTER 5

## Details of tests

Four measures of the children's functioning were used.

1. Boehm Test of Basic Concepts Form A (Boehm, 1971)

This is a group test comprising 50 items divided evenly between 2 booklets. The test constructor claims to have arranged the items in approximate order of increasing difficulty. Each item consists of a set of pictures about which the children have to make a decision involving a concept. Directions are read aloud to the children who mark their individual booklets in response. Each booklet requires 15 to 20 minutes to complete. The test is not timed. It is suitable for Kindergarten, Grades I and II. A sample of the test is included in Appendix 6 and instructions for its administration appear as Appendix 1.

Each concept is contained within a sentence, for example, 'Mark the paper with the star at the top' (concept: top).

The 50 concepts used are listed below:

- |                   |                       |
|-------------------|-----------------------|
| 1. Top            | 18. Corner            |
| 2. Through        | 19. Several           |
| 3. Away from      | 20. Behind            |
| 4. Next to        | 21. Row               |
| 5. Inside         | 22. Different         |
| 6. Some, not many | 23. After             |
| 7. Middle         | 24. Almost            |
| 8. Few            | 25. Half              |
| 9. Farthest       | 26. Centre            |
| 10. Around        | 27. As many           |
| 11. Over          | 28. Side              |
| 12. Widest        | 29. Beginning         |
| 13. Most          | 30. Other             |
| 14. Between       | 31. Alike             |
| 15. Whole         | 32. Not first or last |
| 16. Nearest       | 33. Never             |
| 17. Second        | 34. Below             |

- |                  |               |
|------------------|---------------|
| 35. Matches      | 43. Separated |
| 36. Always       | 44. Left      |
| 37. Medium-sized | 45. Pair      |
| 38. Right        | 46. Skip      |
| 39. Forward      | 47. Equal     |
| 40. Zero         | 48. In order  |
| 41. Above        | 49. Third     |
| 42. Every        | 50. Least     |

The Boehm Test of Basic Concepts was selected because it provides a systematic method of comparing children's knowledge of frequently used concepts in a way that approximates classroom conditions. Although some items use American idioms, it was considered that these did not detract greatly from the value of the test.

## 2. Goodenough Draw-a-Man Test (Harris, 1963)

The purpose of this test was to add a non-verbal 'paper and pencil' dimension to the children's profile of abilities. It is very simple and quick to administer. It provides a measure of visual motor co-ordination and the conception of body details. It is not marked for artistic merit but for the concepts included, no matter how rudimentary.

The child is presented with a blank piece of paper and asked to 'draw the very best man you can'. His work is scored according to parts and detail of the body shown, their relationship to each other, clothing and motor co-ordination.

Although developed nearly 50 years ago the Draw-a-Man Test has retained its standing and value with more recent developments in the testing of young children. It gives a mental age which correlates substantially with tests of general intelligence and relates to the ability to think abstractly (Harris, 1963;



Herbert, 1973; Klasen, 1972).

### 3. Individual Check List for Kindergarten

Two questionnaires were prepared, one to be completed by the teacher for each child and one by the child's parent. (A copy of each is included in Appendix 6)

The Individual Check List for Kindergarten completed by teachers had 58 items relating to 8 characteristics which were rated on a 5 point scale. The characteristics were: hyperactivity and distractibility; laterality (hand); speech; auditory perception; visual motor co-ordination; apathetic and withdrawn behaviour; angry and defiant behaviour; normal behaviour.

The items were chosen for face validity. Some were straight forward (for example, No. 19, Is left-handed), some complex and perhaps obscure (for example, No. 48, Has difficulty leaving school at the end of the day). Appendix 2 gives an analysis of the items in each of the characteristics.

The items measuring hyperactivity and distractibility were directed toward finding those children whose kindergarten behaviour is marked by purposeless physical activity and short attention span.

Two items checked the hand preference of the children and one item the quality of their articulated speech.

The auditory perception items related to impaired ability to interpret and recall information obtained aurally and to arrange ideas sequentially and logically when describing or discussing a topic.

Disabilities in co-ordination of eye and hand

were examined by reference to pencil control and clumsiness.

The above 5 characteristics are commonly accepted areas in which weaknesses will be found in children with learning difficulties. Since these areas have been thoroughly researched, a small number of key items in each area seemed adequate for the purposes of this study. The majority of the items covered the 3 remaining dimensions because it was considered that much less was known about their relevance, if any, to success or failure in school. Two of these, apathetic and withdrawn behaviour and angry and defiant behaviour, have been equated with 2 extremes of non-facilitating conduct and normal behaviour with facilitating conduct. Most of the items in these 3 dimensions were based upon a selection from a scale by Kohn and Rosman (1972a): 'A Social Competence Scale and Symptom Check List'. The items cover behaviours which could be readily observed in a kindergarten setting and refer to social and emotional adjustment.

The Check List items were arranged in such a way that in only 2 instances did 2 items measuring the same characteristic appear consecutively. Since the scoring was to cover a continuum from never displaying to always displaying a certain behaviour (that is, from a low to a high score) the items covering behaviour which it was considered teachers would see as desirable ('normal' behaviour) were spread throughout the Check List. This was done to reduce the possibility of

response set and halo effect in the rating process.

#### 4. Questionnaire for Parents (Notice to Parents of Kindergarten Children).

The characteristics investigated in the questionnaire completed by parents were the same as those in the Individual Check List for Kindergarten. However, there were only 38 items and consequently each area was covered in less breadth. It was deliberately kept as short as possible to avoid boredom or irritation with the task or completing it. The items were in question form. Parents were asked to 'put a tick through "Yes" or "No" whichever is most true for your child'.

An analysis of the questions on each of the characteristics is shown in Appendix 3.

The questions likely to be seen by the parents as indicating desirable qualities in their children were mixed with those likely to be seen as undesirable. This was to encourage parents to use both the 'Yes' and 'No' rating and so avoid response set and halo effect.

It was planned that the question 'Is he/she left-handed?' (the most absolute item) would be used as a way of checking that parents marked the questionnaire in the correct direction. The writer has found that questionnaires involving the Yes/No response method sometimes confuses the respondent: does he mark the one that applies (which he had to do in this case) or cross out the one which does not. With this provision it seemed to provide the simplest format for parents who were going to get no further instruction.

If the question regarding handedness did not agree with the teacher's rating and with the observations made during the group tests, the parents would be contacted to see if the child did use a different hand at home or if there had been an error in the responding method. (In fact, the question proved to be less absolute than expected but it served the purpose of drawing attention to 3 parents who had marked in the wrong way.)

## CHAPTER 6

## Procedure

The interest and co-operation of the Abbotsfield School Infant Mistress and kindergarten teachers were obtained. The first step was the distribution and collection of the Questionnaire for Parents. Two weeks were allowed for its completion and return. The teachers sent the forms home with the children. This is the usual way school notices are distributed to parents. Apart from answers to casual enquiries, no instructions about its completion were offered. In most cases parents were not seen in regard to this investigation by either the teachers or the writer.

Of the 70 parents sent the questionnaire, 50 responded and their children became the study group.

For the Boehm Test of Basic Concepts (BTBC) and the Draw-a-Man Test, the children were tested in groups of 6 to 8.

The writer and an assistant, a third year student from the Tasmanian College of Advanced Education, administered the tests in a kindergarten classroom situation. The teacher remained in the room to reassure any apprehensive children but sat unobtrusively at her desk during the testing.

After rapport was established, the children were given a blank sheet of foolscap paper and asked to 'draw the very best man you can'. Pictures and representations of human figures had been removed from sight and each child was seated in such a way that

he could not see another's work.

The BTBC was administered in 2 sessions, the first one following the Draw-a-Man Test. Unlike older children who could complete the 2 booklets in one session, these subjects were given a break of approximately one half hour at the completion of the first booklet.

It was noted with which hand each child held the pencil for the Draw-a-Man Test, and for both sessions of the BTBC.

The children appeared interested in the test and seemed to enjoy taking it. Nevertheless, several could not sustain attention long enough to complete it satisfactorily.

#### The Individual Check List for Kindergarten

Two sessions were held with the teachers concerning the Check List. On the first occasion, 3 points were made.

1. The children were to be rated according to what the teacher expected of children of that age.
2. The ratings were defined as follows:

Never. Behaviour occurring extremely rarely - perhaps in only 2 per cent of the relevant situations.

Rarely. Behaviour occurring less frequently than usual but sufficient to be noticeable.

Average. Behaviour seen as being like that expected for the age.

Often. Behaviour occurring more frequently than expected.

Always. Behaviour almost completely habitual - perhaps in 98 per cent of the relevant situations.

3. A rating was necessary for each child on each characteristic to fulfil the requirements of the scoring system.

As a preliminary to the investigation, the teachers were requested to do a trial run of the Check List on any 2 children who would not be in the study. This was to provide an opportunity to resolve problems of interpretation of items prior to the rating of children in the study.

At the second session weaknesses in the wording of some of the questions were disclosed. One item in particular posed a problem for all teachers. This was item No. 36: 'Hardly speaks at all'. A garrulous child had to be rated under 'never' and a very non-verbal child under 'always'. This is an awkward way of assessing quantity of verbalization.

After discussion on interpretation of specific items and a review of how frequent is 'rarely', 'often' etc., the writer was satisfied that at least the worst of the misunderstandings about items, if not the subjectivity of rating, had been eliminated.

## CHAPTER 7

### Scoring

With the exception of hand-preference, all the test results, check list and questionnaire items were reduced to numerical data. A complete summary of these appear as Appendix 4.

#### Draw-a-Man Test

Each drawing was scored according to a modified scale of the one used by Dr. Florence Goodenough in 1926 (Harris, 1963). (See Appendix 5 for the scale used.) The highest possible score was 29 points. The Test normally involves the calculation of a mental age. Since this study involved only a comparison of the children within the group, mental ages were not used.

#### The Boehm Test of Basic Concepts

This is scored objectively. Each correct response is counted as one point. The highest possible score is 50 points.

#### Individual Check List for Kindergarten

A numerical value was given to each rating in the order of: never 1; rarely 2; average 3; often 4; always 5.

A high score on the 6 scales measuring hypothesised inhibiting characteristics indicated that the teacher saw the child as having more of a problem in the area than is usual for the age group. A low score indicated that she saw him as better in that area than expected. A high score on the Normal Behaviour Scale indicated



better than expected social and emotional adjustment and a low score, poor social and emotional adjustment.

Although the scoring procedures were objective, the element of subjectivity was involved in that there were 3 raters. No doubt there were considerable individual differences in the interpretation of the meaning of the items and in the estimation of the degree of manifestation of the behaviour.

#### Questionnaire for Parents

The scoring required the count of a 'yes' or 'no' response for each item. The direction of the count varied. On 4 Scales, Hyperactivity and Distractibility, Auditory Perception, Angry and Defiant Behaviour, and Normal Behaviour, the 'yes' responses only were counted. On the Visual Motor Co-ordination and the Apathetic and Withdrawn Behaviour Scales, one 'no' response each was counted (Nos. 2 and 7 respectively). In the remaining items the 'yes' response was counted as in the other 4 Scales. Each positive rating was given the numerical value of one. The higher the score the more the parent saw the child as exhibiting the behaviour being measured.

Three items (Nos. 5, 11 and 24) were counted on both the Hyperactivity and Distractibility Scale and the Angry and Defiant Behaviour Scale.

The 2 items relating to speech were dealt with as follows: a 'no' response to item No. 13 (Did he/she speak later than you consider usual?) was rated 0 and a 'yes' response rated 1. For item No. 14 (Is his/her speech normal now?), a 'yes' response was rated 0 and

a 'no' response rated 1. In each case the '1' rating represented abnormal speech development.

Two items, one each on illness and hospitalization, were not used. Insufficient information was requested as to type of illness, length of stay in hospital and the age of the child when these events occurred.

On all returns, item No. 11 (Is he/she left-handed?) was checked and if the response differed from the teacher's rating for this item or from the writer's observations made during the group tests, the parents were visited. The purpose of this was to ensure that the questionnaire had been marked in the correct direction. Seven parents were visited. In 4 cases the child's laterality was so undecided that the parents, quite appropriately, had left the item blank or had marked both 'yes' and 'no'. This was quite adequate for the assessment of laterality when checked against item No. 9 (Is he/she ambidextrous?) but it did not allow the writer to assume the questionnaire had been marked correctly. In 3 cases, the questionnaires had been consistently marked in the wrong direction. That is, in cases where they wished to respond 'yes', the parents had marked 'no', thinking they were to cross out whichever was not applicable. It is possible some parents were inconsistent in the direction of their response and this went undetected because they were correct on the item regarding left-handedness.

This method of responding was chosen as the simplest and quickest for parents to use. After

talking with parents, the writer now considers it an unsatisfactory method because it tends to be confused with similar answering arrangements. For example, many common forms require the respondent to 'cross out whichever is not applicable' or 'circle your answer'.

## CHAPTER 8

## Results

The statistical analyses of all results are tabulated below.

Boehm Test of Basic Concepts, Draw-a-Man Test  
and Kindergarten Check List

Mean and standard deviation values for girls and boys are given in Table I.

Results are striking in that they show the girls to exceed the boys in mean scores for the characteristics considered to facilitate educational readiness and the boys to exceed the girls in mean scores for characteristics hypothesised as inhibitory. However, tests of significance of the difference between the means showed that in only 3 measures were there statistically significant differences: viz., Boehm Test of Basic Concepts, Speech and the Apathetic and Withdrawn Behaviour Scale.

TABLE I

The mean and standard deviation values for BTBC, Draw-a-Man Test and Kindergarten Check List together with 't' values of test of significance of difference between the means and probability levels

TEST	Highest Possible Score	Girls		Boys		't' test of significance of difference between means*	p
		$\bar{X}$	S.D.	$\bar{X}$	S.D.		
Boehm Test of Basic Concepts	50	33.16	5.60	26.29	11.26	2.87	.01
Draw-a-Man Test	29	12.00	4.33	10.58	3.98	1.16	NS
Kindergarten Check List							
Hyperactivity	20	12.70	2.82	12.90	2.45	n.c.	
Auditory Perception	15	8.66	2.36	10.23	1.72	0.40	NS
Visual Motor Coordination	20	9.74	2.73	12.23	2.17	0.21	NS
Poor Speech	5	2.53	0.94	3.26	1.01	2.49	.02
Apathetic and Withdrawn	85	43.47	10.14	50.32	7.75	2.64	.02
Angry and Defiant	80	38.58	10.08	43.35	9.45	1.66	NS
Normal Behaviour	65	42.00	5.71	38.48	6.21	1.96	NS
		n = 19		n = 31		df = 48	

\*Since the variances and populations were not equal, a homogeneity of variance (F) test was used to determine whether the standard formula (Freund, 1970) was suitable. If the variance was outside statistical limits, the formula to adjust for the difference was used (Edwards, 1960). Two tests required this: BTBC and Auditory Perception.

### Questionnaire for Parents

Mean values of the ratings by parents are shown in Table II. It was not considered worthwhile to use parametric tests of significance because of the combination of the large number of raters and the small number of items in each Scale. Non-parametric tests were used for some scales and are shown below.

The girls again exceeded the boys in the facilitating characteristic (normal behaviour) and the boys exceeded the girls in inhibiting characteristics except in hyperactivity and distractibility.

TABLE II

Mean values for ratings of Questionnaire to Parents

Scale	Highest Possible Score	Girls $\bar{X}$	Boys $\bar{X}$
Hyperactivity	3	1.84	1.77
Auditory Perception	2	.21	.71
Visual Motor Co-ordination	2	.16	.58
Apathetic and Withdrawn	10	3.10	4.1
Angry and Defiant	10	4.20	4.8
Normal	8	6.80	5.9
		n=19	n=31

A chi square to examine for a difference between girls and boys in present speech as seen by parents was planned but was not legitimate because the numbers were too small (McNemar, 1962). Table III shows the numbers of subjects who were seen as having speech problems. There is a higher incidence among boys.

TABLE III

Numbers of subjects seen by their parents as having speech problems

	Poor speech	Late speech development
Boys	5	6
Girls	0	0
Boys n = 31		
Girls n = 19		

#### Relationship between Tests

To compare the relationship of the principal variables for girls, for boys and for the total group, correlation coefficients ( $r$ ) were prepared and these are tabulated in Tables IV, V, and VI.

Significant results were obtained in more than half the correlations. The small number of girls in the sample made it difficult to obtain significant results for their tests.

With one exception all the results were in the expected direction. The correlation between the Draw-a-Man Test and the Angry and Defiant Behaviour Scale for boys and for the total group had a small positive correlation

TABLE IV

Correlation coefficients of the tests and scales for girls

	BTBC	Normal	Apathetic	Angry	Draw-a-Man	Poor Speech
Normal	0.43					
Apathetic	-.67****	-.85****				
Angry	-.31	-.38	0.43			
Draw-a-Man	.54**	.03	-.02	-.03		
Hyperactivity	-.29	n.c.	n.c.	n.c.	-.09	
Poor Speech	-.52*	-.24	.31	.35	n.c.	
V.M.Co-ord.	-.65***	n.c.	n.c.	n.c.	-.45	n.c.
Aud.Perception	-.61***	n.c.	n.c.	n.c.	n.c.	0.24

n.c. = not calculated

\*p &gt; .05

\*\*p &gt; .02

\*\*\*p &gt; .01

\*\*\*\*p &gt; .001

n = 19

df = 17



TABLE V

Correlation coefficients of the tests and scales for boys

	BTBC	Normal	Apathetic	Angry	Draw-a-Man	Poor Speech
Normal	0.50***					
Apathetic	-.18	-.57****				
Angry	-.15	-.56***	0.51***			
Draw-a-Man	.64****	.28	-.21	0.20		
Hyperactivity	-.81****	n.c.	n.c.	n.c.	-.59****	
Poor Speech	-.38*	-.32	.42**	.52***	n.c.	
V.M.Co-ord.	-.50***	n.c.	n.c.	n.c.	-.27	n.c.
Aud.Perception	-.84****	n.c.	n.c.	n.c.	n.c.	0.52***

n.c.=not calculated

\*p &gt;.05

\*\*p &gt;.02

\*\*\*p &gt;.01

\*\*\*\*p &gt;.001

n = 31

df = 29

TABLE VI

Correlation coefficients of the tests for girls and boys combined

	BTBC	Normal	Apathetic	Angry	Draw-a-Man	Poor Speech
Normal	0.32*					
Apathetic	-.36**	-.71****				
Angry	-.21	-.52****	0.51****			
Draw-a-Man	.60****	.22	-.24	0.06		
Hyperactivity	-.60****	n.c.	n.c.	n.c.	-.36**	
Poor Speech	-.47****	-.35**	.49****	.50****	n.c.	
V.M.Co-ord.	-.57****	n.c.	n.c.	n.c.	-.38***	n.c.
Aud.Perception	-.73****	n.c.	n.c.	n.c.	n.c.	.46****

n.c. = not calculated

\* p &gt; .05

\*\*p &gt; .02

\*\*\*p &gt; .01

\*\*\*\*p &gt; .001

n = 50

df = 48

(.20 and .06 respectively) whereas a negative correlation was expected.

The variables which had large differences between the  $r$ s for girls and boys were tested (using  $z$  scores) to determine if there was a significant difference between them. The results showed a significant psychological difference between the girls and the boys in the relationship between the Boehm Test of Basic Concepts and two scales on the Kindergarten Check List: Apathetic and Withdrawn Behaviour and Hyperactivity and Distractibility.

Two other results showed a strong tendency toward a difference between boys and girls but they were not statistically significant. Results are given in Table VII.

TABLE VII

Results of test of significance of difference between correlation coefficients for girls and boys

Tests	Result	p
Apathetic & BTBC	1.99	<.05
Hyperactivity & BTBC	2.65	<.05
Normal & Apathetic	1.93	NS
Hyperactivity & Draw-a-Man	1.88	NS
n = 19 girls n = 31 boys	Critical region	1.96

### Relationship between apathetic and angry behaviour

In view of the significant correlation between the Apathetic and Withdrawn Behaviour Scale and Angry and Defiant Behaviour Scale for boys and for the total group, a  $\chi^2$  was calculated to determine if a significant number of subjects fell either above or below the median on both these scales. The result was significant,  $\chi^2 = 15.71$ ,  $df\ 1$ ,  $p < .001$ .

This finding suggests strongly that the correlation coefficients were not the result of a few extreme scores but that behaviour presumed to be at the extremes of a continuum was in fact exhibited by the same children.

The proportion of girls and boys who were either above or below the median on both scales was approximately the same (77% of boys and 78% of girls). As would be expected from the results of statistical tests, there were proportionately many more boys than girls high on both scales and proportionately more girls low on both scales.

### Laterality

The results of a count of right-handers, left-handers and those who had no clear preference are shown in Table VIII. A chi square was calculated to determine whether there was a significantly greater number of boys than girls with incomplete lateralization. The difference was shown to be significant,  $\chi^2 = 8.84$ ,  $df = 1$ ,  $p < .01$ . The rating of teachers and observations made during the group tests were used to determine this characteristic.

It was not legitimate to calculate  $X^2$  for the difference of the incidence of left-handedness in girls and boys because 2 of the cells would have had expected frequencies of less than 5 (McNemar, 1962). However, inspection of the numbers shows a higher incidence among boys.

TABLE VIII  
Laterality of Girls and Boys

	Right-handed	Left-handed	Incomplete Lateralization.	n
Girls	17	1	1	19
Boys	18	5	8	31

Laterality and Speech in boys

A test of significance of difference between the mean values of the ratings for speech on the Kindergarten Check List for right-handed boys compared with left handed and 'undecided' boys combined showed the right-handers as being seen by the teachers as having better speech; this result was significant ( $p < .01$ ).

Details are in Table IX.

TABLE IX

The mean and standard deviation values for the Speech rating for boys on the Kindergarten Check List together with 't' value of test of significance of difference between the means

	n	$\bar{X}$	S.D.	't' test of significance of difference between means	p
Right-handers	18	2.77	.88	3.59	.01
Left-handers and 'undecided' boys	13	3.93	.83		
Highest possible score = 5    n = 31    df = 29					

The mean for left-handed boys was 3.60 and for the 'undecided' group, 4.12.

The number of subjects was not considered large enough to allow legitimate statistical comparisons between the speech of the 3 groups, right-handers, left-handers and 'undecided' boys. However, inspection of the means shows the tendency for right-handers to speak better than left-handers and for both groups to speak better than those who are still 'undecided'.

#### Comparison of Teacher and Parent Ratings

Table X summarizes the results of the comparison of the ratings given by teachers and parents on the 3 Scales: Normal Behaviour, Apathetic and Withdrawn Behaviour and Angry and Defiant Behaviour. The subjects were grouped as above or below the median on each of the scales for both teacher and parent. The  $X^2$  value indicates the degree of agreement. Teachers and parents were in agreement on which children had 'normal'

behaviour but not on those who were apathetic or angry. However, when the grouping was extended to include either apathetic or angry behaviour there was a significant relationship ( $p < .05$ ). That is, teachers and parents agreed on the children who had 'undesirable' behaviour but not on which of these behaviours was being exhibited.

TABLE X

$\chi^2$  values of agreement of ratings between  
teacher and parent

Scale	$\chi^2$ value	p
Normal Behaviour	9.68	$< .01$
Apathetic Behaviour	0.32	NS
Angry Behaviour	0.08	NS
Apathetic and Angry Behaviour combined	3.98	$< .05$
n = 50      df = 1		

The findings obtained from the data are consistent with the predictions except, whereas a negative correlation between apathetic and withdrawn and angry and defiant behaviour was expected, the correlation was positive.

## DISCUSSION



## CHAPTER 9

Differences in educational readiness  
of boys and girls

One of the major findings to emerge from the results of this study was the difference in educational readiness between boys and girls: the results showed a pattern of greater readiness in girls. However, the results have to be treated with some caution because there were fewer girls than boys in the study (boys  $n = 31$ , girls  $n = 19$ ).

Actually the finding of superiority of girls is dependent upon the notion of what constitutes 'educational readiness'. Here, fairly widely used criteria were used: good spoken language, no serious retardation in intelligence, good visual motor co-ordination, clearly established manual laterality, ability to concentrate, ability to retell a simple story or event in fairly logical sequence, ability to use play materials constructively, not subject to undue anxiety, generally self-reliant and reasonably co-operative with others. Previous studies have strongly suggested that various combinations and strengths of these characteristics do constitute educational readiness (Bakwin and Bakwin, 1972; de Hirsch in Naidoo, 1971; Farrar, undated; Wlasen, 1972; Naidoo, 1971). Experience with infant school children confirms the results of the more formal research.

Although the means for all but one of the measures (tests, teachers' and parents' ratings) were in the

expected direction (favouring girls) the difference between only 3 reached statistical significance: viz., Boehm Test of Basic Concepts ( $t = 2.87$ ,  $p < .01$ ); Poor Speech ( $t = 2.49$ ,  $p < .02$ ); Apathetic and Withdrawn Behaviour Scale ( $t = 2.64$ ,  $p < .02$ ). The exception was on the parental rating of hyperactivity and distractibility and here the difference was very small (boys  $\bar{X} = 1.77$ , girls  $\bar{X} = 1.84$ , highest possible score = 3). In the rating on this behaviour by teachers the results were similar for boys and girls (boys  $\bar{X} = 12.90$ , girls  $\bar{X} = 12.70$ , highest possible score = 20).

#### VERBAL CONCEPTS TEST AND SPEECH RATINGS

The finding of a significant difference between boys and girls for the 2 measures of language is in line with other studies of children of this age. Superiority of language development is apparently one of the strengths of girls upon entering school (Anastasi, 1958; Hollingworth, 1961; Mussen, Conger and Kagan, 1969; Rutter, Tizard<sup>and</sup>/Whitmore, 1970; Terman and Tyler, 1954). The consistent finding of an association between general language ability and written language skills has been covered in Chapter 2.

#### SPEECH AND PARENTAL RATINGS

More boys than girls were seen by their parents as currently having poor speech (boys 5, girls 0). Klasen (1972) warns against regarding parental reports of articulation as accurate. She states that many parents are so used to their child's speech that they do not notice its quality compared with that of

other children. (Perhaps the element of expectancy is sometimes a factor as well as familiarity).

In this study 8 parents indicated that their child's speech was normal whereas the teacher rated it below average. Conversely 3 parents indicated that their child's speech was poor and the teacher saw it as normal. Despite these anomalies, the observation of a greater incidence of poor speech among boys was maintained.

### BEHAVIOUR

The finding that boys had a statistically significant higher mean than girls on the Apathetic and Withdrawn Behaviour Scale ( $t = 2.64$ ,  $p < .02$ ) was surprising. It was expected that the girls would come nearer the boys on this Scale than on the Angry and Defiant Behaviour Scale ( $t = 1.66$ , NS). Usually girls have been found to be more dependent than boys (Mussen, Conger and Kagan, 1963) and it was anticipated that this characteristic would have increased their scores on the Scale since some of the items concerned the need for the teacher's direction and support. (Reminder: the items for all Scales appear as Appendix 2). The result is probably accounted for by the fact that being less ready for school than the girls, the boys are unable to respond to the activities and routine of the kindergarten.

Since boys are usually considered to be more aggressive than girls (Anastasi, 1958; Bakwin and Bakwin, 1972; Chazan and Jackson, 1974; Mischel, 1970)

the relatively small difference between them on the Angry and Defiant Behaviour Scale was unexpected. The teachers did not see the boys as very much more angry and defiant than the girls. In the British National Child Development Study (Davie, Butler and Goldstein, 1972) boys at aged 7 more frequently showed behaviour which had an aggressive component. Studies reported by Anastasi (1958) and Mischel (1970) indicate that boys react more aggressively to frustration than do girls. So perhaps those boys in this study who fail in the classroom will be more aggressive by the time they are 7 years old. As well, the difference between the boys and girls as they grow older will probably increase because the girls may be expected to become more socially passive and conforming.

A stage of behavioural flux in children of kindergarten age is suggested by the fact that, contrary to what was predicted, the results of the Apathetic and Withdrawn Behaviour Scale and the Angry and Defiant Behaviour Scale were not negatively but positively correlated, for both boys and girls.

#### LATERALITY

There was a higher incidence of left-handedness among boys and a statistically significant number of boys who were neither clearly right- nor left-handed ( $X^2 = 8.84$ ,  $p < .01$ ). Gesell and Amatruda (1947) in tracing the developmental history of children, state that the establishment of dominance is related to the

child's developmental rate. A greater number of boys with incomplete lateralization then is evidence for the proposition that boys have a delayed rate of development.

In a survey of the manual laterality of 2,024 children (boys  $n = 1,068$ , girls  $n = 956$ ) in Grade I in Hobart Infant Schools conducted by the Guidance Branch of the Tasmanian Education Department during 1974 it was found that 9.26 per cent of the boys and 8.15 per cent of the girls were left-handed. Of those who were neither clearly right- nor left-handed, 6.83 per cent were boys and 2.37 per cent were girls.

#### DRAW-A-MAN TEST

The boys' result for the Draw-a-Man Test came nearer to the girls' result than in the language measures. Goodenough (in Klasen, 1972) found that with the exception of 12 year olds, girls had higher results on the test but these were not statistically significant. Goodenough attributed the difference more to personality differences (for example, the desire to please and attention to detail) than to intelligence. However, it seems possible that the non-verbal nature of the Draw-a-Man Test gives boys some intellectual advantage compared with their performance on verbal tests. An appreciation of the concepts of the human body is a basic knowledge; it is a less abstract and a more primary kind of learning than are verbal skills. Therefore, perhaps the Draw-a-Man Test comes nearer to innate intelligence than do verbal tests.

DIFFERENCES BETWEEN CORRELATION COEFFICIENTS  
FOR BOYS AND GIRLS

Although the boys were rated as having significantly more apathetic and withdrawn behaviour than the girls on the Kindergarten Check List, the results showed that the girls who were apathetic and withdrawn performed significantly lower on the Boehm Test of Basic Concepts (BTBC) than did boys with this behaviour. (A test of difference between the  $r$ s for boys and girls on the BTBC and the Apathetic and Withdrawn Behaviour Scale was significant at the .05 level.)

The finding of lower achievement in infant schools among children characterised by apathetic and withdrawn behaviour has been reported in earlier studies (Kohn and Rosman, 1972b; Kobi, in Klasen, 1972; Silverman, in Kohn and Rosman) and these studies found no differences between boys and girls.

If girls are more accelerated in their development (and this seems to be established at least for physical and language development) it is possible that the difference found between boys and girls on the BTBC and the Apathetic and Withdrawn Behaviour Scale is accounted for by the fact that the girls are 'older' and have had more time to fall behind than have the boys. In fact, because of the difference in developmental age, the test may not be as relevant to the boys at 5½ years as it is to girls of the same age.

Although teachers rated girls as being almost as hyperactive and distractible as boys, the rs for boys and girls for the BTBC and the Hyperactivity and Distractibility Scale were significantly different. Hyperactive boys had significantly lower results ( $p < .05$ ) on the BTBC than did hyperactive girls. The BTBC involved the use of several procedures that required a degree of maturity in matters other than just knowing the concepts. The test involved marking a booklet with a pencil, perseverance with the task for 15 to 20 minutes and instructions given to the group rather than to the individual. Being 'older' than the boys, even the girls seen by the teachers as hyperactive and distractible, were apparently able to cope better with the total task. As well, the general superiority in verbal ability of girls no doubt influenced the result.

The difference in the rs for boys and girls for the Draw-A-Man Test and the Hyperactivity and Distractibility Behaviour Scale did not quite reach statistical significance but there was a trend in that direction, probably for similar reasons to those suggested for the difference in the BTBC and Hyperactivity and Distractibility Scale. The Draw-A-Man Test involves paper and pencil and is done in a group. Since it does not involve language (even the instructions 'Draw me the very best man you can' are very simple), it is to be expected that the difference

would be less than for the BTBC. As well, the time taken to complete the test is usually not more than 2 to 3 minutes and so hyperactivity is less likely to be a significant variable.

Although the difference for the rs for boys and girls for the Normal Behaviour Scale and the Apathetic and Withdrawn Behaviour Scale did not reach statistical significance, it showed a strong tendency toward a difference. In the girls, these two sorts of behaviour were more discrete than in the boys. The difference can probably be explained by the greater immaturity of the boys. They are nearer the stage when their behaviour will shift back and forth between social outgoing behaviour and 'parallel play' and between interest in the kindergarten activities and apathy toward them.

#### REASONS FOR DIFFERENCES

These data support the premise that girls are better adjusted socially and emotionally and have more verbal concepts and better articulated speech than boys in kindergarten. It is reasonable to hypothesise that these advantages form the basis for their superiority in written language in the infant and primary grades of school.

Why such differences should exist does not seem to be satisfactorily explained yet. However, the acceleration of the physical development of girls is a starting point. Since the difference in skeletal



age begins in foetal life, the cause is presumed to arise either directly or indirectly from the action of genes on the Y chromosome, though just how is not known (Tanner, 1963, 1970; Terman and Tyler, 1954). The sex difference in skeletal maturity is not limited to man but occurs in other primates, rats and probably other mammals. Its biological significance is not yet known.

Difference in rate of skeletal development occurs not only between the sexes but between individuals of the same sex. There is a good deal of overlap between the sexes and so many boys will be ahead of individual girls in the rate of development.

It is not proper to assume that similar differences to those in skeletal age will exist in perceptual and other central nervous system functions. In fact, in another aspect of physical development there is less difference. Although the skeletal age of boys is only 80 percent of that of girls, the dental age of boys is about 95 percent of that of girls (Tanner, 1970).

The difference in rate of physical development seems to be one fact upon which we can base any explanation of better adjustment and achievement by girls. Advantages arising from this are not inconsiderable. Early control on muscles for fine motor movements gives an advantage. Girls are

usually able to dress themselves at an earlier age than boys, wash themselves, turn door handles and the like (Anastasi, 1958; Tanner 1970). These skills provide opportunities for earlier independence, and underlie the sub-skills needed for reading and writing. In the present study, although the difference was not significant, the mean for boys for poor visual motor co-ordination was higher than that for girls.

Earlier control of the motor aspects of speech has been proposed by Anastasi (1958) as a cause for the general superiority of girls in language functions.

The early acquisition of skills no doubt affects the response girls receive from those caring for them; for example, earlier socialization because of language development, greater independence and acceptance because of better fine motor movements. Earlier bowel and bladder control, common among girls and considered to be due in part to superior muscular development (Rutter, Tizard and Whitmore, 1970), certainly brings a desirable response from 'significant others'.

Perhaps the more aggressive response of boys to frustration comes about because they have experienced more of it and from an earlier age. Frustration arising from inability in linguistic situations particularly may account for more stuttering, stammering and other speech disorders among boys.

If the possibility of slower development of the central nervous system in boys is accepted, the later establishment of lateralization in boys is explained. In this study significantly more boys than girls were neither clearly right- nor left-handed.

Further studies may show girls to be accelerated in the development of visual and auditory perception, vital sub-skills in early school achievement. In this study the girls had a lower mean than boys for auditory imperception but the result was not significant.

If the differences are due entirely to a developmental lag in boys, why do boys not catch up? Bakwin and Bakwin (1972) claim that they do but not until after high school. They point out that boys excel girls in almost all types of intellectual activity and creative productions. It seems that role expectancy throughout life and opportunity after leaving school have previously been a deterrent to academic success for girls. Present changes in social conditions for women may eventually change the situation.

For the time being, the question of why boys do not catch up until near the end of high school, if then, remains. Some late developing boys must find that when they are ready, the opportunity to learn basic skills has slipped by. The years of being 'unready' will rarely have been neutral years. A sense of failure and a good deal of anxiety about

school work will have developed. Perhaps slow developers, boys and girls, would outgrow the problem if the undesirable side effects were controlled and they were taught when they were ready and at the pace at which they could succeed. Brechenridge and Vincent (1965) state that in general, the evidence from a large number of studies indicates that until a child is physically and neurologically ready, training in any activity is useless and may set up negative feelings toward the activity and so delay the learning. However, a Danish neurologist, Hermann (1959) writing on reading disability warns against waiting for the maturation of the process to occur before teaching any language function. He claims 'that the only thing we know for certain about maturation processes in the central nervous system is that, for example, the maturation of nerve fibres (i.e. their acquisition of myelin sheaths) is promoted by repeated functions. One is therefore fully justified in arguing that immaturity is a prerequisite for the establishment of learning, and, furthermore that maturation processes are facilitated by practice of what has been learnt'(p. 31).

### READING READINESS

The concept of readiness for reading in particular has received a good deal of attention from educators. Reading is probably the most complex of all the learning tasks facing the child

when he enters school. It involves discriminating between small graphic symbols, comprehending their spatial relationships, decoding the symbol to speech and getting meaning from the symbols. These processes are smoothly integrated in an accomplished reader but all are laboured in a beginning reader.

At present 6 years is considered to be about the age at which children are ready to learn to read but it seems to be generally accepted that there will be considerable individual difference in the optimal age (Gates, 1964; Mussen et. al., 1963; Totten, 1974). Vernon (in Newton, 1971) lists inadequate readiness for reading as an important causal factor in reading failure.

Educational psychologists and teachers have designed tests to gauge the proper time for children to begin reading instruction. These tests take account of the individual developmental stages of the child in the processes considered relevant to the task. They include tests of various aspects of visual and auditory perception, language tests including articulation, and tests of motor skills, laterality and emotional and social adjustment.

The value of reading readiness tests depends very much on the relevance of the skills tested to the task of learning to read. Some writers question if there is, as yet, any adequate theory to explain how children learn to read and exactly what is the relationship of the various component parts in the reading process (Elkins, 1973; Gates, 1964;

Maliphand, Supramaniam and Saraga, 1974; Otto, 1972). Until these matters are established, reading readiness tests cannot be validated.

It seems reasonable that a certain maturity will be required before children can succeed in learning to read and that there will be differences in the age at which children reach this maturity. There is an obvious increase with age in ability to cope with complex stimuli and an increase in attention span from infancy to 6 years. The studies by Piaget and his co-workers have shown that cognitive development in children follows an hierarchical, sequential pattern of development.

There are conflicting views as to the value of systematically training the sub-skills presumed to be relevant in learning to read. Two European school systems, The Rudolf Steiner School and some Dutch schools, do not give formal reading instruction until basic conceptual and perceptual skills are mastered and integrated (Orlow, 1974). Hartman (1974) questions the value of general perceptual and motor training. She considers a more direct approach to the task is desirable. She does, however, advocate that the reading process be analysed into the smallest possible components for children who are having problems. So in fact her recommendations may not be as different as they at first appear.

Durrell (1964) also believes that it is more efficient to teach reading directly than attempt to

train motor abilities, visual discrimination through pictures and identification of non-word sounds. His approach to reading is phonic and, like Hartman, he recommends that the task of teaching sounds and their related visual symbols be analysed into very small components so that each child has continual success in mastering the material.

Hartman and Hartman (1973) warn against premature judgement about either method of approaching the teaching of reading. Research is still in progress and the evidence thus far is that both may have a place.

Since boys are more likely than girls to be unready for the demands of reading at the age of 6 years, pre-reading activities or a method which analyses the task into very small units is of particular value to them. Perhaps it does not matter which approach is used if the child is not pressured to succeed in activities for which he does not yet have the necessary maturation. A value of many pre-reading activities is that they acquaint children who have had little experience with books and writing materials with the concepts of books, for example, left to right orientation.

#### NON-COGNITIVE FACTORS

The notion that girls' superiority in early school work is attributable to or greatly enhanced by non-cognitive factors is commonly accepted (Bakwin and Bakwin, 1972; Davie et. al., 1972; Rutter et. al., 1970). In this study the boys were seen by the

teachers as being more apathetic and withdrawn in the kindergarten than girls. As well, although it did not reach statistical significance, the difference between the means for boys and girls for the Normal Behaviour Scale showed a trend in favour of the girls. The items on this Scale comprise those behaviours thought to facilitate learning in the classroom. For example, 'Is responsible in carrying out requests, directions and routines' (No. 9) and 'Can be independent of adults in having ideas and planning activities' (No. 39).

Some writers believe that although male and female roles have changed in recent years, the female role is still more identified with classroom tasks than are male roles. Infant teachers are almost always female. Mussen, et. al. (1963) suggest that this could lead to an identification of the process of acquiring knowledge with the female role. As well, they suggest that boys will identify their teacher with their mother. At about the time they enter school, they are establishing their identity with their father and are usually seeing Dad as 'boss' at home. This may lead to a de-emphasising of the power of the mother and other adult females, including infant teachers. Such an attitude could lead to hostility toward the female teacher leading to behaviour problems. They propose that if boys' first teachers were men, they might identify themselves more satisfactorily with the learning situation and be less resistant to school



work.

Boys may be under greater stress from parents to succeed at school because of vocational necessity. Since many boys are probably unable for reasons of maturation to succeed, increased pressure, albeit well intentioned, could compound the problem. This sort of problem would be expected in middle class families where in fact there has been an epidemic of dyslexia coinciding with the need for better educational qualifications in the employment field.

Although some of the above cannot be changed an awareness should allow adjustments to be made. It would seem that boys are receiving unequal opportunity by being treated the same as girls at school.

Children of primary school age are referred to educational psychologists for problems in arithmetic less frequently than for problems in reading, writing and spelling. The difference probably arises for two reasons. Firstly, a problem in arithmetic is less pervasive than one in written language. Secondly, there are in fact less problems because in the initial stages there are less symbols to memorize and there is a more constant relationship between the visual symbol and its meaning.

Most researchers find that boys at all ages are superior to girls in all types of arithmetical ability (Anastasi, 1958; Mussen et. al., 1969). The British National Development Study reported by Davie et. al. (1972) found that boys at 7 years were superior to girls in arithmetic.

The present study did not include a measure of ability in arithmetic and therefore did not touch on the strength of the boys. It is doubtful if such a test would have been useful because at  $5\frac{1}{2}$  years number concepts are still very rudimentary, although ability to count by rote has usually been mastered.

The BTBC contains two numerical position concepts, second and third, and the girls had more of these correct than did the boys. However, in the context of the test, these were probably nearer verbal concepts than arithmetical concepts. The results may have been different had the task required a concrete response to '2' and '3'.

An anomaly of the difference between boys and girls is that although little girls have the motor skills which enable them to become independent earlier, and in fact do dress and wash themselves earlier, they are usually found to be more dependent than boys. Mischel (1970) states that few sex differences in dependency are found in young children. Perhaps dependency is a role expectancy characteristic acquired by girls. An attitude of over-protection by parents and others may teach girls what is expected of them.

The differences in educational readiness do not apply only between the sexes. Within each sex, wide individual differences will be found and many boys

will exceed girls in their readiness for school. As in most studies of group differences, this study focused attention primarily upon means and other group comparisons. The following chapters will deal with group differences other than those found between boys and girls.

## CHAPTER 10

Relationship of verbal concepts test  
to other measures

The data clearly indicated that for the children in this study there was an association between the verbal concepts test - Boehm Test of Basic Concepts - and most of the other measures.

Detailed results appear in Tables IV, V and VI. For convenience some results are repeated below.

There were positive correlations between the Boehm Test of Basic Concepts and:

## (i) Draw-A-Man Test

- (a) girls  $r = .54, p < .02$
- (b) boys  $r = .64, p < .001$
- (c) total group  $r = .60, p < .001$

## (ii) Normal Behaviour Scale

- (a) girls  $r = .43, NS$
- (b) boys  $r = .50, p .01$
- (c) total group  $r = .32, p < .05$

There were negative correlations between the Boehm Test of Basic Concepts and:

## (i) Poor Speech

- (a) girls  $r = -.52, p < .05$
- (b) boys  $r = -.38, p < .05$
- (c) total group  $r = -.47, p < .001$

## (ii) Hyperactivity and Distractibility Scale

- (a) girls  $r = -.29, NS$
- (b) boys  $r = -.81, p < .001$
- (c) total group  $r = -.60, p < .001$

## (iii) Apathetic and Withdrawn Behaviour Scale

- (a) girls  $r = -.67, p < .001$
- (b) boys  $r = -.18, NS$
- (c) total group  $r = -.36, p < .02$

## (iv) Visual Motor Coordination Scale

- (a) girls  $r = -.65, p < .01$
- (b) boys  $r = -.50, p < .01$
- (c) total group  $r = -.57, p < .001$

## (v) Auditory Perception Scale

- (a) girls  $r = -.61, p < .01$
- (b) boys  $r = -.84, p < .001$
- (c) total group  $r = -.73, p < .001$

IMPORTANCE OF VERBAL CONCEPTS IN THE CLASSROOM

The adverse effect of inadequate language on a child commencing school is widespread. A lack of words which designate concepts may handicap him in the thought processes which lie behind language. He will be deprived of the greatest tool for sequencing thought processes and have inadequate facility for interpreting and communicating what he experiences.

The BTBC tests children's knowledge of frequently used basic concepts and their ability to respond to these on paper. Children reach the stage of conceptualizing when comparing physical objects before they are able to respond correctly in a more abstract situation such as that involved in the BTBC booklets. For example, most children could place an actual toy behind a chair before they could mark a toy behind a chair when these are presented in pictorial form. However, since the school situation deals with books, a child

who has not reached the abstract stage is at a disadvantage in the classroom.

In kindergarten, instructions are often given in words and gestures. When books and pencils are used and work with symbols begins, there is usually much less gestural communication from which the child can get directional cues. Boehm (1971) selected the concepts used in her test according to their frequency in the directions of school curriculum materials.

Children who do not have a knowledge of the concepts 'through' and 'different' (both BTBC items) would be unlikely to have success in the following reading readiness activity taken from page 1 of SRA's 'The Red Book' (Thurstone, 1973): 'If the two pictures in each box are different, draw a line through them. If they are the same, do not mark them.' (The concept 'same' is considered to be more difficult to grasp than the concept 'different'. In the Stanford Binet Intelligence Scale (1960), verbal items involving differences appear at Year VI and items involving likenesses appear at Year VII.) A wary teacher would attempt to ensure that the children understood the concepts involved in any activity provided. However, there is a wide range of individual differences within normal language development of kindergarten and infant school children. Some children would have to be carefully taught the concepts while others

would have completely mastered them. Most would be able to complete the task if the teacher showed them what to do; it seems that a potential hazard for language development in children is the assumption by parents and teachers that children automatically learn the verbal concepts from practical demonstrations. In fact what they may be learning is not to bother following oral instructions but to wait until they are shown what has to be done.

In this study, there was a wide range of scores among the children on the BTBC. The child with the lowest score completed only 4 items correctly and the one with the highest, 45. The total number of items was 50.

Socio-economic factors, considered to be an important variable in concept development in children, were not controlled here except that all the children attended the same school and lived in Tasmanian Government Housing Commission homes.

#### VERBAL CONCEPTS AND DRAW-A-MAN TEST

The significant positive correlation between the BTBC and the Draw-a-man Test suggests a relationship arising from a general intelligence factor. Although one is verbal and the other non-verbal, the finding follows the traditional theory of an underlying 'general' intelligence factor in cognitive functioning separate from specific factors.

Harris (1963) summarizes studies undertaken since Goodenough's work in 1926 showing a correlation between the Draw-a-Man Test and both verbal and non-verbal intelligence tests in young children. He concludes that the relationship is due to an underlying ability to form abstract concepts.

Bakwin and Bakwin (1972) claim that the Draw-a-Man Test is <sup>a</sup>/fairly accurate intelligence test while the importance of the verbal element in intelligence is widely accepted (McNeill, 1970; Mussen, Conger and Kagan, 1963; Rutter, 1970).

#### VERBAL CONCEPTS AND THE NORMAL BEHAVIOUR SCALE

The significant positive correlation between the BTBC and the Normal Behaviour Scale for boys and the total group and the strong trend in that direction for girls is in line with other findings. The items on the Normal Behaviour Scale were largely directed toward good social adjustment. The positive relationship between social skills and good language development has been reported by Rutter (1970) and Gibbs (1963). The ability to understand what others are saying and to make oneself understood early and readily no doubt avoids some of the frustration of infancy and early childhood.

Bayley (1970) reports on studies which showed a significant correlation for both sexes between intelligence and friendliness, co-operativeness and attentiveness.



It seems that a 'chicken and egg' problem exists between these two characteristics. A child who can converse readily usually receives a reinforcing response from the adults (and later the children) around him. He, in turn, finds the world satisfying because of this response and is able to act in socially acceptable ways. At the same time, a child who acts in socially acceptable ways is more likely to receive attention from adults and this attention, much of it in the form of conversation, will increase the child's language ability, including his knowledge of concepts.

Verbal concept mastery and improved social-<sup>generally</sup>ization/both increase with maturation of the child.

#### VERBAL CONCEPTS AND POOR SPEECH

Although the result of a significant negative correlation between the two measures of language was predicted, the writer could find very little literature on a necessary relationship between verbal concepts and poor speech. There seems to be no reason why poorly articulated speech resulting from physical (motor) causes need be directly associated with poor development of verbal concepts. Frequently, no doubt, both will have a common underlying cause; for example, general delayed development, low intelligence, cerebral injury or genetic weakness in the language centres of the brain.

Perhaps a relationship often occurs because the child has both a poor model of articulated speech and grammar and an environment from infancy of what Bernstein terms 'restricted' code language.

There was a significant relationship between poor speech and verbal concepts for girls as well as boys.

#### VERBAL CONCEPTS AND THE HYPERACTIVITY AND DISTRACTIBILITY SCALE

Hyperactivity and distractibility have consistently been found by researchers to be causes of educational failure in infant school children.

Regardless of why they are hyperactive and distractible, if children cannot sit still and concentrate, they are likely to have problems with school work, particularly with the complex task of reading.

A very high negative correlation was found in this study between the BTBC and the Hyperactivity and Distractibility Scale for boys but there was only a slight trend in that direction for girls. Possible reasons for this have been suggested in Chapter 9.

In a small number of children, poor language and hyperactive and distractible behaviour occur as the result of neurological dysfunction of one sort or another (Huessy, 1974; Manson, 1973; Vernon, 1971).

Orlow (1974) claims that some children seen by the teacher as hyperactive and disruptive in

the classroom have low tolerance for frustration. Their problem is not reading or mathematics per se but a general difficulty in handling complex learning tasks. For all but a few children learning to read is a laborious process. For those with low frustration tolerance, the task becomes intolerable and they set up an avoidance response before they achieve any reading success. Such behaviours as wriggling, physically moving out of the situation and watching the activities of others are common ways of avoiding the task. If such children are successful in avoiding the learning situation early in their school career they are likely to adopt this way of responding to all learning tasks that pose problems for them.

Orlow suggests that identification of this group of children early in their school career could reduce the problem. Learning tasks could then be broken down into the smallest possible units, thus reducing the arousal of frustration. In a class of thirty or more children, such individual programming is difficult to carry out and the teacher quite understandably often exacerbates a child's avoidance behaviour by completing the task for him. Early experience in having the teacher complete his work increases the likelihood that he will develop techniques for manipulating future teachers into doing his work for him. Orlow's theory seems to offer a profitable area for further

research, especially in relation to the avoidance behaviour of boys, who generally experience more frustration and confusion in all linguistic situations than do girls (Anastasi, 1958). Klasen (1972) found a high incidence (31.2 per cent) of low tolerance for frustration in her study of 500 dyslexics. However, when found in children who have failed for a number of years, it is not possible to say if the tolerance level was a primary cause or is an effect of the failure.

#### VERBAL CONCEPTS AND THE APATHETIC AND WITHDRAWN BEHAVIOUR SCALE

The possible reasons for the finding of a highly significant negative correlation between the BTBC and the Apathetic and Withdrawn Behaviour Scale for girls but not for boys has been discussed in Chapter 9.

Children who lack feeling or interest in normally stimulating situations are ill-equipped for acquiring knowledge of their surroundings. Some children who do not reach out into the environment have low intelligence. They do not have sufficient cognitive ability to make sense of the stimuli which come to them. Emotional disturbance may cause children to be indifferent to what is going on around them. A child who is fearful or insecure will often avoid any exploratory activity, especially if his early curiosity has been inhibited. Unenquiring behaviour, for whatever reason, will very likely reduce the value of many learning opportunities

including verbal concept learning.

A characteristic not necessarily related to apathetic and withdrawn behaviour but often associated with it in young children is dependency on adult support. Some of the items on the Apathetic and Withdrawn Behaviour Scale concerned the need for the teacher's direction and support. Dependency is proposed as a characteristic of children with below average attainment in school (Francis - Williams, 1970; Mussen et. al., 1963).

#### VERBAL CONCEPTS AND THE ANGRY AND DEFIANT BEHAVIOUR SCALE

Kohn and Rosman (1972b) found no correlation between angry and defiant behaviour assessed at school entry and later school achievement for boys, but for girls there was a relationship. Kohn and Rosman proposed that this difference came about because girls with this behaviour were less tolerated by the teacher than boys with the same behaviour and a poor relationship with the teacher developed.

Angry and defiant behaviour, including a mildly aggressive element, is generally not as much associated with poor school attainment as apathetic and withdrawn behaviour (Harris, 1961; Klasen, 1972). In this study, the  $r$ s for the BTBC, the Draw-a-Man Test and the Angry and Defiant Behaviour Scale were not near statistical significance.

The situation is not quite the same in older children. In the Isle of Wight study (Rutter,

Tizard and Whitmore, 1970), a significant relationship was found between aggressive anti-social behaviour and reading retardation in older boys but not in older girls. Holte (1972) claims that a large number of reading failures eventually become angry failures, often to the extent that they are legally categorized as juvenile delinquents.

These findings do not necessarily imply aggressive characteristics as a cause of educational failure. The anti-social behaviour is just as likely to be a result of the failure as a cause of it. Since school attainment particularly in the language areas is connected with speech, and speech problems are often associated with poor social adjustment, there may be a relationship before formal schooling starts. Longitudinal studies which examine the characteristics of children in kindergarten and follow their progress and behaviour until adolescence would be useful. A study of those children who have no behavioural problems when they enter school but have perceptual deficits or spoken language problems which predispose them to failure and vice versa would help clarify the situation of cause and effect.

#### VISUAL CONCEPTS AND VISUAL MOTOR COORDINATION

The Kindergarten Check List contained only 4 items covering visual motor coordination and so results have been treated with caution.

The items covered visual motor skills within the capabilities of most children at the age of 5½ years; for example, control of a pencil or crayon (No. 5) and ability to fasten buttons (No. 24).

Since the items on the Visual Motor Coordination Scale were worded in the negative form, a negative correlation with the BTBC (which was scored on number correct) was expected. That is, children who were rated by the teacher as having poor visual motor control (within the limited range covered by the items) were expected to have lower scores on the BTBC. The statistically significant negative correlation was high for both boys and girls.

The attainment of both gross and fine motor control and the coordination of these processes with visual perception is primarily an outcome of maturation (Mussen et. al., 1963; Tanner, 1970). To a lesser extent, verbal concept development is also associated with maturation. So the relationship between the two characteristics found in this study is probably partly due to delayed development in some children. As well, children with lower than average intelligence would be less able in both verbal concept knowledge and visual motor skills.

The BTBC test required some direct visual motor ability. Although the response required was not difficult (merely a mark on the appropriate picture), those children who were not proficient

with a pencil would have been at a disadvantage. The task would probably have been more tiring and less familiar for them than for those children who were accomplished in pencil and paper skills.

Coordination of eye and hand is a basic sub-skill for success in normal classroom work. Reading and writing require conceptual skills, particularly for the comprehension of what is read and written but sensory and motor skills are also essential. Poor visual motor coordination is frequently found in children with extreme reading and writing retardation (Bakwin and Bakwin, 1972; Klasen, 1972; Newton, 1971). It is one of the most commonly listed symptoms of children who are considered to be dyslexic.

Jordan (1972) points out that poor visual motor coordination is frequently associated with an even greater disabling factor - an inability to comprehend order and sequence. This disability is pervasive and often extends to comprehension of time, verbal instructions, letters in a word, words in a sentence and digits in a sequence (for example, a telephone number). As well, there is usually confusion as to direction. This causes letters and words to be reversed in both reading and writing. Most children are confused in these matters in their early years but those with normal development outgrow the problem as they mature. The few who do not are among those at greatest risk in school. Evidence as to whether there is a causal relationship



between any of these factors or whether they are all symptoms of underlying neurological impairment or delayed development is not yet available (Klasen, 1972).

While very few children have the extreme handicaps described in the literature on dyslexia, no doubt many are handicapped in varying degrees by poor visual motor coordination and concomitant disabilities when they enter Grade I. When these disabilities are associated with poor verbal concept formation, as is apparently the case for some in this study, such children would seem to have a considerable obstacle to overcome before they can progress in school.

#### VERBAL CONCEPTS AND AUDITORY PERCEPTION

The negative correlation between the BTBC and the Auditory Perception Scale was significant. As was the case with the Visual Motor Coordination Scale, the items were worded in the negative form. The number of items was small ( only 3) and this must be taken into account in evaluating results.

Auditory perception is defined as the process of reception and interpretation of sound stimuli (Carter, 1972). It is therefore a vital part of spoken language. On this account an association between the BTBC and the Auditory Perception Scale was expected. Also, as with visual motor coordination, both are likely to be influenced by delayed development and low intelligence.

One item on the Scale concerned the ability to remember instructions. Since the instructions for the BTBC were given orally to the group, children who had a weakness in this area would have been penalized in the test situation.

Unfortunately children who are unable to order and sequence visually presented material are often unable to sequence material received aurally (Bakwin and Bakwin, 1972; Critchley, 1971). In fact sequencing inability is aggravated in orally presented material because the child is slow in understanding what has been said and often becomes chronically anxious because he is never sure that he has heard accurately. A vicious circle sets up; he is anxious because he may not understand what is said to him and this anxiety retards efficient short-term memory storage. He needs continually to ask the speaker to repeat what has been said. The social friction produced by this habit increases his anxiety. And so he understands and recalls less of what is said to him.

Pick and Pick (1970), in summarising wide research into the processes involved in learning to read, conclude that ability to discriminate speech sounds correlates well with early reading achievement. Durrell (1964) claims that the major subskills in which retarded readers are weak are those associated with the ability to detect the

separate sounds in words. Most beginning readers, he believes, are auditory failures rather than visual failures.

Some grasp of basic verbal concepts is essential for success in school. The child who has this, as well as average or above intelligence, who is emotionally and socially well adjusted and who has no gross perceptual deficits or articulated speech defects is in an ideal position to benefit from his early school experiences. Those who have deficits will usually be less successful. Fortunately, strengths in other areas often allow the child to compensate for weaknesses. In fact, few children have the subskills necessary for school attainment in an equal degree and so individual progress is the result of the balance of his strengths against his weaknesses. Those who fall behind have weaknesses in most areas and few compensating strengths or have very severe weaknesses in one or two areas.

## CHAPTER 11

Speech and laterality, auditory perception  
and behaviour

Support for the contention that there is a relationship between articulated speech and laterality in boys is given by the results obtained in this study. A significant difference was found between the mean values of the ratings for speech on the Kindergarten Check List for right-handed boys compared with left-handed and 'undecided' boys ( $t = 3.59$ ,  $p < .01$ ). The right-handers were seen by the teachers as having better speech.

There was only one left-handed girl and one who had not established manual laterality. Therefore statistics were not attempted for girls. Observation of the raw scores show that the left-handed girl was rated by her teacher as having 'average' speech and the girl with incomplete laterality was rated as having 'superior' speech.

The grouping together of left-handers and those who showed no clear preference was done to make the size of the groups more even for statistical purposes. Unfortunately, this obscured the fact that it was probably the 'undecided' boys who caused the highly significant result. The means for the 3 groups were:-

Right-handed boys	2.77 (n = 18)
Left-handed boys	3.60 (n = 5)
'Undecided' boys	4.20 (n = 8)
Highest possible score (indicating poor speech)	5.00

In her study of severely retarded readers, Klasen (1972) did not treat the left-handers and those who were neither clearly right- nor left-handed separately because she could find no satisfactory way of diagnosing which children were clearly left-handed and which had not yet established dominance for either hand. In a right-handed world, many children (and adults) who are left-handed often do many things with their right-hand. Strong cultural pressures often exist to force the use of the right hand for some activities, for example, the use of knife and fork. Certain skills which need to be carefully taught such as sewing are often learned using the same hand as the teacher.

Gesell and Amatruda (1947) claim that children who have speech difficulties and poorly defined laterality have serious difficulty in learning to read. Many well known researchers on reading failure have found the same pattern (Critchley, 1971; Klasen, 1972; Newton, 1971; Vernon, 1957).

Formal school work had not begun for the children in this study and there had been little, if any, pressure in the kindergarten to use one or other hand for activities such as drawing, pasting and cutting. Within a few months of the completion of the tests most children would have been introduced to writing, usually by copying their own names. As soon as writing commences, children are confronted, often for the first time, by a situation where they will be encouraged (sometimes

forced) to be consistent in which hand they use. Perhaps such a decision should not be demanded before they have sufficient neurological maturity to make the decision.

Clark (1970) claims that there is no inevitable association between prolonged difficulty in reading and writing and left-handedness and that sensitive treatment and adequate instruction of left-handers could alleviate problems they encounter in school.

Left to right confusion and difficulties with spatial orientation are commonly found associated with weak hand preference (Burt, 1946; Clark, 1970; Mittler, 1970; Newton, 1971). These problems, when combined with poor speech, are usually severe handicaps to educational readiness.

It seems likely that the relationship between speech and left-handedness or late establishment of laterality is not one of cause and effect but rather that both are effects of a third factor, probably neurological impairment or delayed development (Klasen, 1972). The high probability of an association between cerebral dominance and localization of language functions has been established by neurologists (Geschwind, 1972). Such work pioneered by Broca in the 1860's has depended greatly on work with patients who have suffered brain lesions and on subsequent post-mortems on these patients.

### SPEECH AND AUDITORY PERCEPTION

A significant positive correlation for boys ( $r = .52$ ,  $p < .01$ ) and for the total group ( $r = .46$ ,  $p < .001$ ) was obtained between Poor Speech and <sup>the</sup> Auditory Perception Scale. The  $r$  for the girls was low but in the same direction.

Since the reception of sound stimuli is part of the process of auditory perception, it was expected, on common sense grounds, that children who had poor auditory perception would also have poor speech. Varying degrees and kinds of hearing loss are sometimes the cause of both weaknesses (Griffiths, 1971).

The items in the Auditory Perception Scale did not distinguish between auditory discrimination, auditory sequencing and auditory memory. Even in an individual assessment it is difficult to know precisely in which areas a child is having difficulties. The serious implications of any disturbance in auditory perception on beginning reading are referred to in Chapter 10.

### SPEECH AND BEHAVIOUR

Some evidence of a relationship between speech and behaviour was given by the correlations obtained between Poor Speech and the Behaviour Scales.

As predicted there was a significant positive correlation for boys between Poor Speech and the Apathetic and Withdrawn Behaviour Scale ( $r = .42$ ,  $p < .02$ ) and between Poor Speech and the Angry

and Defiant Behaviour Scale ( $r = .52, p < .01$ ). There was a negative correlation between Poor Speech and the Normal Behaviour Scale but it did not quite reach statistical significance ( $r = -.32, p < .10$ ). Although the pattern of the girls' results was similar to that of the boys, no correlations reached significance level.

The results for the total group ( $n = 50$ ) have higher probability levels. (The difference comes about because of the greater degree of confidence which can be placed in results when there is a larger number of subjects.) The correlations were: Poor Speech and Apathetic and Withdrawn Behaviour Scale  $r = .49, p < .001$ , positive correlation; Poor Speech and Angry and Defiant Behaviour Scale  $r = .50, p < .001$ , positive correlation; Poor Speech and Normal Behaviour Scale  $r = -.35, p < .02$ , negative correlation.

These results are similar to those of other studies. Vernon (1957) claims there is a general association between speech defects and emotional disorders of various kinds. Recent studies have confirmed Vernon's findings. Rutter (1970) and Rutter, Tizard and Whitmore (1970) claim that research in Great Britain has consistently shown a relationship between emotionally disturbed children and general language disorders.

A somewhat higher correlation between Poor Speech and the Angry and Defiant Behaviour Scale than for Poor Speech and the Apathetic and



Withdrawn Scale suggests that perhaps those children who have more trouble than usual making themselves understood by others are forced into various kinds of aggressive behaviour as a way of discharging frustration and tension. They have been unable to freely substitute words for actions in conflict situations. However, Rutter (1970), found speech defects more associated with withdrawn, solitary, dependent behaviour.

The problem again arises as to which comes first; does poor speech force a child into non-integrative behaviour or do certain personality traits in some way retard the acquisition of clearly intelligible speech? Both are possibly often the result of delayed maturation. In other cases, it seems likely that poorly articulated speech, particularly when associated with general language retardation, would frequently provide the circumstances in which a child would either withdraw from social situations in which he finds himself inadequate or, in his frustration, become angry and aggressive. A child who receives no gratification from successful participation in social situations is likely to be frustrated, disappointed, fearful and poorly motivated in attempting further social involvement. The particular way he reacts to his inadequacy is likely to be influenced by his innate pre-dispositions and his early experiences.

In each of the relationships considered in this chapter, the results have shown that the boys have more inhibitory characteristic combinations than do the girls. The cause for this is possibly twofold. Firstly, there was a smaller number of girls in the group and this makes significant results more difficult to obtain. Secondly, boys are less able in speech and this weakness is associated with other characteristics more than is the case with girls. Rutter (1970) states that speech difficulties in psychiatrically ill girls were less than in boys with the same illnesses. Hallgren (in Bakwin and Bakwin, 1972) found poor speech more frequently among boys with severe reading retardation than among girls with severe reading retardation. The penetration of poor speech into other areas of functioning is perhaps one of the things which makes boys vulnerable to educational failure.

## CHAPTER 12

## Kindergarten Check List Behaviour Scales

The correlation coefficients between the Normal Behaviour Scale and both the Apathetic and Withdrawn Behaviour Scale and the Angry and Defiant Behaviour Scale suggest that the Normal Behaviour Scale contained items which were valid for the assessment of what teachers saw as normal behaviour compared with what they saw as abnormal. Significant negative correlations, for girls, boys and the total group were obtained between the Normal Behaviour Scale and the Apathetic and Withdrawn Behaviour Scale. In all cases probability was at the .001 level. (Results are shown in Tables IV, V, and VI).

The difference between the Normal Behaviour Scale and the Angry and Defiant Behaviour Scale was not as great. For boys, the negative correlation probability level was .01 and for the total group .001. The  $r$  for the girls did not reach statistical significance but the relationship was negative and near significance level.

'Normal behaviour' in the context of this study was the kind of behaviour that is expected by teachers of children who are considered sufficiently stable and mature to benefit from social situations in which co-operation is necessary for some of the activities and routines. It involves adjustment to new situations and experiences and the achievement of some satisfaction from kindergarten activities, a degree of self-reliance and independence in self-care routines and the ability

to engage in an activity for a short time without continually asking for help or needing to be directed to activities. The Apathetic and Withdrawn Behaviour Scale and the Angry and Defiant Behaviour Scale covered behaviours which were not consistent with these attitudes.

Those children who have what is described here as 'normal behaviour' have some of the non-cognitive characteristics necessary for educational readiness.

#### THE APATHETIC AND WITHDRAWN BEHAVIOUR SCALE AND THE ANGRY AND DEFIANT BEHAVIOUR SCALE

The finding obtained for the two Scales measuring inhibitory behaviour was inconsistent with the hypothesis that these behaviours would be two extremes of a continuum. The correlation between the two Scales was not negative as predicted but positive. Further, for the boys and the total group, the correlation reached statistical significance (boys  $r = .51$ ,  $p < .01$ ; total group  $r = .51$ ,  $p < .001$ ). The  $r$  for the girls was near significance level. So in these children behaviour considered somewhat deviant for the age group was more vacillating in its manifestations than expected. Instead of being apathetic and withdrawn or angry and defiant in the kindergarten, many of them apparently exhibited both types of behaviour.

The results of a  $X^2$  to determine if the relationship between the two Scales was caused by a few extreme cases indicated that the correlation was the result of a general trend and not the result of a few extreme scores ( $X^2 = 15.71$ ,  $p < .001$ ). The proportion of boys to girls who were above or below the median on both Scales was approximately the same.

At this stage of development, it seems likely that children have not yet consolidated their modus operandi for their reactions to social situations, particularly those situations in which they feel anxious or inadequate. The fact that they do not appear to have settled their response suggests that it might still be possible, given the appropriate environment, to move them toward reactions which are more socially acceptable and personally satisfying. Mussen, Conger and Kagan (1963) comment on the swing of many 5 year olds between excessive dependence and independence. Apparently children at this age are in a stage of conflict about seeking help from others and dealing with things independently.

#### OVERLAP OF CHARACTERISTICS ON THE BEHAVIOUR SCALES

Unfortunately the measures of behaviour on the Kindergarten Check List and the Questionnaire for Parents covered only two general areas of behaviour - apathetic and withdrawn and angry and defiant. Both were relatively crude because they did not distinguish sufficiently between kinds of behaviour. This was particularly so on the Apathetic and Withdrawn Behaviour Scale.

Apathetic behaviour and withdrawn behaviour have some elements in common, for example, lack of affect (English and English, 1958) but there are also differences between them. Withdrawn behaviour usually arises as a response to a conflict situation <sup>or to a situation</sup> in which the child is confronted with more stimuli than he can manage. The resulting behaviour may in fact be apathetic; that is, he may appear indifferent, listless and unresponsive.

Low intelligence, poor physical health, and malnutrition may cause apathetic behaviour but in these cases there is less likely to be defensive reactions to social and physical stimuli. For purposes of assessment of educational readiness on a group basis, perhaps no great harm is done by grouping these characteristics together because, regardless of the cause, such behaviour is likely to hinder early educational success. However, if diagnosis is to be followed by ameliorating intervention, a more discriminating assessment of the cause would be essential.

Even more inappropriate was the inclusion in the Apathetic and Withdrawn Behaviour Scale of items that rate the degree of dependence and lack of self-reliance. These characteristics may be allied to apathy but are not necessarily so. For example, a child rated high on needing aid for each step of an activity (item No. 8) may do so because he wants the teacher's attention. Another child may be too fearful of failure to attempt anything without direction. Others may be simply indifferent to the task and find that constant direction from the teacher is the easiest way of getting the job done.

The term 'aggressive' would perhaps have made the Angry and Defiant Behaviour Scale more descriptive of the behaviour involved. This is the common description of much of the behaviour covered by the items in the Scale.

It is interesting to see that although there is a high positive correlation between the Apathetic and Withdrawn Behaviour Scale and the Angry and Defiant

Behaviour Scale, nevertheless each of these Scales when correlated in turn with other measures used in the study showed a different pattern of relationships. This suggests that the two Scales investigated different but related types of behaviour and that the differences were sufficient to affect other characteristics, for example, cognitive development.

A more thorough investigation of the relationship of the social and emotional characteristics considered likely to retard educational progress should involve a more rigorous analysis of categories of behaviour. If such an investigation used one of the factor analysis statistical techniques, greater clarification of the relationship between the behaviours covered by the Scales and between these behaviours and other cognitive and non-cognitive factors might be obtained.

#### RATING PROCEDURE

The requirement that teachers rate all the pupils on each characteristic (for statistical purposes) caused a procedural anomaly which to some extent may have invalidated the results. If the behaviour in an item had not been observed, the child was rated 'average' for that characteristic along with those children seen by the teacher as being genuinely average for that behaviour. It is difficult to overcome this problem in a simple design of this kind when group statistics are planned. Conversation with teachers subsequent to the rating procedure indicated that a number of 'average' ratings were given in cases where there had been no opportunity to observe the children in the relevant situation.

### RELIABILITY OF KINDERGARTEN CHECK LISTS

Studies of non-cognitive factors in kindergarten show that ratings by teachers are predictive of future educational problems. In a study of infant children, Keogh and Tchir (1974) found that teachers were able to predict which children would have problems in school work. However, they were less able in differentiating the type of problem. For example, they found it difficult to know if the child was emotionally disturbed, of low intelligence or had a neurological impairment which would lead to specific rather than general learning problems. One important finding made by Keogh and Tchir was that the teachers saw the children with specific difficulties much more negatively than they did those with generally low intelligence. If this is a consistent pattern among teachers, it perhaps helps explain some of the undesirable side effects seen in children with specific difficulties. Not only are these children aware of their inadequacies (an awareness often felt less by children with general learning difficulties) but their teacher's reactions to them exacerbate their feelings of worthlessness and their poor self-concept.

Chazan and Jackson (1974) assessed a group of children in Grade I on behaviour characteristics similar to those involved in this study (restlessness, withdrawal, aggression, sociability and independence) and on a reassessment in Grade III found the same children had similar behaviour to that displayed in Grade I. By Grade III, undesirable behaviour was usually more extreme or seen to be so by the teachers. However,



the assessment of increased severity of problem behaviour may have been a result of a less accepting attitude by the teachers to such behaviour in the children as they grew older.

If, as these studies suggest, it is possible for teachers to predict failure and if behaviour exhibited in Grade I continues at least until Grade III, it seems that Check Lists or similar tests offer reliable means for early detection of children who will have problems in school. If detection were followed by appropriate developmental and therapeutic activities, a decrease in educational failure might result. Researchers seem agreed that the earlier intervention occurs the more hope there is of success even if intervention in the early grades only brings relief from pressure to succeed before they are able to do so. (Bakwin and Bakwin, 1972; de Hirsch, 1968; Manson, 1973; Schechter, 1971).

#### COMPARISON OF PARENT AND TEACHER RATINGS

The purpose of involving parents was to examine differences in the way teachers saw the children compared with the way parents saw them. The design of the study was not adequate to fulfill this aim successfully.

The results of the comparison of ratings given by teachers and parents on the Normal Behaviour Scale showed that there was significant agreement on which children had normal behaviour ( $X^2 = 9.68, p < .01$ ).

There was no agreement between teacher and parent ratings on the Apathetic and Withdrawn Behaviour Scale or the Angry and Defiant Behaviour Scale. However,

when grouping included both sorts of maladaptive behaviour, the result was  $X^2 = 3.98$ ,  $p < .05$ .

The result suggests that the children who do not exhibit any extreme behaviour are seen similarly by the teacher and parents. As the Normal Behaviour Scale and the Boehm Test of Basic Concepts were highly correlated for boys and showed a strong trend in that direction for girls, the agreement is probably on those children who have no serious language problems, follow directions satisfactorily and have average or above intelligence.

From the information available, it is not possible to know if those children who were rated differently by teachers and parents do in fact act differently at home or if the same behaviour was judged differently.

Some children are abnormally subject to stress. The tension arising during the early months in kindergarten may manifest itself as withdrawn behaviour at school but in an aggressive reaction at home where they are more likely to feel safe enough to act this way. Similarly, some children who are defiant in the relatively permissive kindergarten situation may be withdrawn in a home which is authoritarian or repressive. Kindergarten children's behaviour is largely a series of reactions to the situations in which they find themselves. If they are having emotional and social problems, different reactions to different environments are likely to occur.

The significant positive correlation obtained between the Apathetic and Withdrawn Behaviour Scale and

the Angry and Defiant Behaviour Scale indicates that the same child is likely to behave in both ways at school. Therefore it does not seem unreasonable that he might exhibit varied reactions at home.

There were obvious differences between teachers and parents as raters. There was much more variety among the parents than among the teachers and there were also only 3 teachers compared with 50 parents. The teachers were a relatively homogeneous group in this context. They brought middle class values to the situation. The parents were probably more heterogeneous, representing a wider range of social backgrounds and consequently some differences in expectancy of children's behaviour. For example, a child who is seen by the teacher as aggressive in class and would therefore be rated high on some of the items on the Angry and Defiant Behaviour Scale may be much less aggressive than other children either in the family or children with whom the parent has close associations. From the parent's point of view, this child may be rated highly on the items on the Apathetic and Withdrawn Behaviour Scale as an outcome of relative subjectivity.

When a child enters school, he enters a new social world comprising peers and teachers. This world becomes progressively important to him. If he finds the values and attitudes of his teachers and new friends similar to that of his parents, he is likely to have less difficulty adjusting to the school situation. Differences in matters as common-place as hygiene, dress, manners, sharing and respect for ownership can be

overlooked by middle class teachers but can be traumatic for younger children who enter a foreign social world when they come to school.

The results of this study suggest that some of the children are well adjusted to both worlds and others are not. Among those who are not, there may be some who are experiencing inconsistency between school and home.

## CONCLUSIONS

## CHAPTER 13

## Review and implications for education

This study was undertaken in an attempt to explore some of the factors which were considered to be relevant to educational readiness. An interest in this aspect of educational psychology arose from the problems encountered by some children in attaining literacy and in the attitudes, emotional problems and habits which many of them develop as an outcome of failure and frustration. The plight of boys compared with that of girls was of particular concern.

Since reading is one of the most important and complex skills taught when children commence formal education, particular emphasis was given to the cognitive and non-cognitive variables which were considered to be important in the process of learning to read.

A survey of the literature showed that most writers placed great importance on the development of language in the educational process. In fact, poverty of language seems to be accepted as a major cause of poor educational achievement.

Measurable differences in rate of physical development and inferred differences in perceptual and intellectual development were proposed as causative factors in the diversity found among children with respect to educational achievement.

Despite a great deal of research on dyslexia as a cause of written language retardation, there is still little agreement with regard to whether it is a discrete syndrome unrelated to other kinds of reading failure or whether these children merely have weaknesses at the extreme end of a continuum in vital reading sub-skills.

Most writers point out the importance of non-cognitive factors such as emotional and social adjustment, interest and motivation in educational attainment.

The abilities on verbal and non-verbal group tests and functioning as seen by teachers and parents of a group of 50 kindergarten children were examined in an attempt to compare their educational readiness. It was predicted that girls would be superior to boys in the skills and behaviour considered relevant to educational and reading readiness and that those children with good language ability would have more mature perceptual development and normal behaviour than those with poor language development. The results confirmed the hypotheses.

Although not all the differences between boys and girls were statistically significant, the results showed the girls to be advanced in the characteristics considered to facilitate progress in formal education and the boys to have more of the hindering characteristics.

It seems likely that boys' disadvantage in early education is due to a number of factors:

1. Boys develop later physically and perhaps

neurologically and are therefore 'younger' if they start school at the same chronological age as girls.

2. Boys, either for developmental or other reasons, are less able in spoken language, the basis of written language which forms a large part of the present day educational programme.

3. Boys, either for organic reasons or by training, are less temperamentally suited to the role of the learner. They are less interested and involved in the kindergarten programme and are more distractible. Girls tend to be more conforming to routines and consequently school offers them a more accepting environment.

4. The above handicaps cause more boys than girls to miss being taught basic skills at a stage when they can use the instruction. Boys therefore have more experience of early failure with resulting frustration and anxiety about school work.

No indication was available from the results as to how much of the difference between boys and girls was due to physiological causes and how much was the result of differential treatment from their earliest years by parents and siblings. The unravelling of the relationship between developmental rate, neural structure, endocrinological factors, role expectancy and differential social factors is a large area of child development yet to be completed. This applies to differences within the sexes as well as between them.



Differences in educational readiness other than those between boys and girls were found. The children who had good verbal concepts and articulated speech were more likely to have good non-verbal intelligence, better auditory perception and visual motor co-ordination, more socialized behaviour, to be independent, able to follow routines and to take more interest in kindergarten activities than those children without these language skills. This confirms other studies which have found delays in the development of perceptual processes and maladaptive behaviour in children who have handicaps in the vital area of language. Language is perhaps the crucial factor in linking other areas of development. A child without adequate words and clear ideas may not be able to sort himself out and so be forced into non-integrated behaviour. On the other hand, a child with these skills has an advantage in gaining control of himself, in handling social situations and in generally ordering his environment.

This study was not sufficiently discriminating to allow for any conclusions except very broad generalizations for the group. There would be great variety in the degree of relationship between the variables in any individual case. Each child would have his own pattern of integrating his particular strengths and weaknesses and this pattern would determine his early success or failure in school. Only a very few children would have problems in all of the above areas.

The results do not provide any basis for categorical claims of<sup>a</sup> cause and effect relationship between the

variables. In some cases, general intelligence and/or developmental stages will account for the correlations and, of course, it is possible that some of them were obtained purely by chance.

There were more left-handed boys than girls in the study and significantly more boys than girls who were neither clearly right- nor left-handed. The articulated speech of the right-handed boys was seen by the teachers as being better than that of the left-handed and 'undecided' boys.

Parents and teachers agreed on children who had 'normal' behaviour but not on those who had either apathetic and withdrawn or angry and defiant behaviour. However, when those children with either kind of maladaptive behaviour were grouped together, there was agreement. That is, both parents and teachers saw the same children as having extreme behaviour of some kind. This difference may have been caused by the fact that in some cases children react differently at home and in others, that parents saw the same behaviour differently. There was a positive correlation between the results of children seen by teachers as having apathetic and withdrawn behaviour and angry and defiant behaviour indicating that children exhibit both sorts of behaviour at school. As they have not yet settled their style of reaction at school, it seems reasonable that they might act similarly at home.

## IMPLICATIONS FOR EDUCATION

The purpose of this study was to enquire into the characteristics of kindergarten children with a view to using any information obtained to reduce educational failure. Differences are apparent by the age of 5½ years. If the important skill is language, it is likely that the most potent factors for educability are located innately in the child and his home. It seems then that equality of educational opportunity cannot be achieved solely by changing educational practices. Some children commence school at a disadvantage. They are unable to use opportunities offered and the deficits are presumably cumulative. No doubt the roots of educational retardation for many children are to be found in the home. However, from the point of view of practical education, there has to be an acceptance of this and a programme planned to remove as many of the disadvantages as possible.

Regardless of the reason why a child is 'at risk', early detection seems to offer the common sense way of approaching the problem. This allows for the removal of pressure from the child who has not reached the stage at which he can reasonably be expected to succeed. There would then be less need for the development of compensatory mechanisms and of a 'failure syndrome'. A programme which presses a child to read merely to keep homogeneity of work within the class has the potential to create problems. Stress often delays learning and in extreme cases causes a complete

blockage. A child's image of himself as a successful or unsuccessful pupil is established during the infant school years. Older children are less able to change their image of themselves even if they later attain success. Children at the other end of the scale also have problems. Early experiences of boredom and frustration at not being able to move on are undesirable but probably not as damaging to the child in the long term. Recent trends in education in Tasmania have removed the worst of the practices in this direction. To some extent, until recently, lip service only has been given to the concept of the uniqueness of each child. There is now a genuine attempt to cater for individual needs. The child is accepted for what he is and not what the teacher thinks he should be and the educational programme is geared to allow him time to grow.

The psychologist's ideal that formal education commence for each child when he is ready for it is sometimes unrealistic for a teacher who has 30 children in her class. Having a link with both psychology and education, educational psychologists should perhaps now look more to the prescriptive area and less to the descriptive area of educational processes. For example, there tends to be a focus on variables which discriminate good readers from poor readers rather than on relating psychological variables to the reading process. How the component skills are integrated requires investigation. Is the strength of the good reader merely the absence of the weaknesses of the poor reader?

The writer considers that she asked a reasonable question for the purpose of this study but has been left with other equally important questions. One interesting question concerns the difference between boys and girls in vocational attainment. If girls have the early predisposition to excel over the boys, what educational, social, economic, physiological, emotional and psychological factors intervene between kindergarten and the time for vocational choice? The manifest evidence is that boys as a group completely outdo the girls. Why?

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## APPENDICES

APPENDIX 1Instructions for Administration of the Boehm Test  
of Basic Concepts.

## FORM A: DETAILED DIRECTIONS

## BOOKLET 1

When ready to begin testing, say to the children:

"I am going to give each of you a book. Leave it on your desk until I tell you what to do".

Distribute copies of Booklet 1, face up. Then say:

"I have given you a book with some pictures in it. We are going to do different kinds of things with the pictures. Listen and do just what I say. First, print your name on the line up here".

Point to the line at the top of the cover of the demonstration copy. (With very young children, it may be necessary to write the names for the children.)

## SAMPLE QUESTIONS

When the names have been written, say:

"We are going to look at pictures and mark X's on them. This is how you make an X."

Draw a large X on the blackboard. Then say:

"Now find the gray box with the telephone in it. Put your finger on it."

Check to see that every child has found the gray box. Assist those who are having trouble. When each pupil has his finger on the box, start reading the sample questions. Remember to emphasize the italicized words. Begin by saying:

"Now take your finger off the gray box and pick up your pencil (or crayon)."

"Now look at the shoe, the hat, and the sock.

Mark an X on the hat....Mark an X right on the hat".

Wait until all of the children have responded. Then say:

"Now look at the things to ride in. Mark an X on the boat....Mark the boat.

"Look at the fruit, Mark the banana....Mark the banana.

"Very good. Now put down your pencils (or crayons). I will look at your books. Do not turn the page. If you make a mistake or want to change an answer, make a circle around it like this (demonstrate on the blackboard) and then make the new mark."

Make certain that each child has written his name correctly and has put X's on the hat, the boat, and the banana. Correct the child's name where necessary. If anyone has marked a wrong item, point out the error and have the child correct it. If any child's X's are not directly on the hat, the boat, or the banana, ask him to make these corrections also.

When all work has been checked, start to read the Test Questions.

#### TEST QUESTIONS

Say:

"Now open your books."

Assist the children if necessary. Then point to the gray box on the left-hand page of the demonstration booklet and say:

"Look for the gray box like this one on your page.

Put your finger on the gray box with the book  
in it."

Check to see that each child has found the proper box. Then start reading the test questions. (Do not read the question numbers.)

1. "Now take your finger off the box and pick up your pencil (or crayon). Look at the pictures of writing paper with stars. Mark the paper with the star at the top....Mark the paper with the star at the top.
2. "Look at the beads and strings. Mark the bead that has a string through it....Mark the bead that has a string through it.
3. "Look at the table and the boxes. Mark the box that is away from the table....Mark the box that is away from the table.
4. "Look at the toys. Mark the toy that is next to the truck....Mark the toy that is next to the truck."

Then point to the gray box on the right-hand page of your demonstration booklet, and say:

"Now put your finger on the gray box with the candle in it."

See that everyone has found the proper box. Then say:

"Now pick up your pencil.

5. "Look at the pictures of the house and the boy.



Mark the house with the boy inside it....Mark the house with the boy inside it.

6. "Look at the boxes and marbles. Mark the box that has some but not many marbles....Mark the box that has some but not many marbles.
7. "Look at the flowers. Mark the flower that is in the middle....Mark the flower that is in the middle.
8. "Look at the plates of cupcakes. Mark the plate that has a few cupcakes....Mark the plate that has a few cupcakes.  
"Now turn the page and find the gray box with the scissors in it".

Demonstrate and point to the box.

9. "Look at the boats. Mark the boat that is farthest from the shore....Mark the boat that is farthest from the shore.
10. "Look at the boxes and circles. Mark the box that has circles around it....Mark the box that has circles around it.
11. "Look at the balloons and the tree. Mark the balloon that is over the tree....Mark the balloon that is over the tree.  
"Now find the gray box with the pencil in it".

Point to the box on the right-hand page.

12. "Look at the doors. Mark the door that is widest. ....Mark the door that is widest.
13. "Look at the boxes of eggs. Mark the box that has the most eggs....Mark the box that has the most eggs.

14. "Look at the jars, cups, and spoons. Mark the thing that is between the spoons....Mark the thing that is between the spoons.
15. "Look at the cakes. Mark the cake that is whole. ...Mark the cake that is whole.  
"Now turn the page. Find the gray box with the hat in it."

Demonstrate and point to the box.

16. "Look at the boys going to school. Mark the boy who is nearest the door....Mark the boy who is nearest the door.
17. "Look at the animals walking in a line. Mark the second animal....Mark the second animal.
18. "Look at the glasses on the table. Mark the glass that is at a corner of the table....  
Mark the glass that is at a corner of the table.  
"Now find the gray box with the light bulb in it".

Point to the box on the right-hand page.

19. "Look at the groups of animals. Mark the group that has several rabbits....Mark the group that has several rabbits.
20. "Look at the sofa and the toys. Mark the toy that is behind the sofa....Mark the toy that is behind the sofa.
21. "Look at the groups of trees. Mark the group where all the trees are in a row....Mark the group where all the trees are in a row.

"Now turn the page. Find the gray box with the bottle in it."

Demonstrate and point to the box.

22. "Look at the groups of blocks. Mark the group that is different from the others....Mark the group that is different from the others.
23. "Look at the pictures of a girl. Mark the picture that shows how the girl looked after her hair was cut....Mark the picture that shows how the girl looked after her hair was cut.
24. "Look at the bottles. Mark the one that is almost empty....Mark the one that is almost empty.
25. "Look at the pies. Mark the pie that is half gone. ...Mark the pie that is half gone".

#### FORM A: DETAILED DIRECTIONS

##### Booklet 2

When ready to begin testing, say to the children:

"I am going to give each of you another book. Leave it on your desk until I tell you what to do."

Distribute copies of Booklet 2, face up. Then say:

"I have given you another book of pictures. Listen and do just what I say. First, print your name on the line up here."

Point to the line at the top of the cover of the demonstration copy. Write the children's names for them if necessary.

## SAMPLE QUESTIONS

When the names have been written, say:

"We are going to mark X's on pictures as we did before. Remember, this is how you make an X."

Draw a large X on the blackboard. Then say:

"Now find the gray box with the telephone in it. Put your finger on it."

Check to see that every child has found the gray box. When everyone has his finger on the box, begin reading the sample questions. Start by saying:

"Now take your finger off the gray box and pick up your pencil (or crayon).

"Now look at the spoon, glass, and cup. Mark an X on the glass....Mark an X on the glass".

When all of the children have responded, say:

"Look at the furniture. Mark an X on the table....Mark an X on the table.

"Now look at the animals. Mark the dog.... Mark the dog.

"Very good. Now put down your pencils (or crayons). I will look at your books.

Do not turn the page."

Make certain that each child has written his name correctly and put X's directly on the glass, the table, and the dog. Have them make any necessary corrections.

When all of the booklets have been checked, start to read the Test Questions.

## TEST QUESTIONS

Say:

"Now open your books."

Assist the children if necessary. Then point to the gray box on the left-hand page of your demonstration booklet and say:

"Look for the gray box like this one on your page. Put your finger on the gray box with the book in it."

Check to see that each child has found the proper box. Then read the test questions. (Do not read the question numbers.)

26. "Now take your finger off the box and pick up your pencil (or crayon). Look at the circle and the boxes. Mark the box that is at the center of the circle....Mark the box that is at the center of the circle.
27. "Look at the box of marbles and the groups of marbles. Mark the group that has as many marbles as the box....Mark the group that has as many marbles as the box.
28. "Look at the box and the circles. Mark the circle that is at a side of the box....Mark the circle that is at a side of the box".

Point to the gray box on the right-hand page of the demonstration booklet, and say:

"Now find the gray box with the candle in it.

29. "Look at the trees and squirrels. Mark the squirrel that is beginning to climb a tree... Mark the squirrel that is beginning to climb a tree.

30. "Look at the desserts. One is an ice cream cone and one is a piece of pie. Mark the other dessert. ...Mark the other dessert.
31. "Look at the shapes. Mark the shapes that are alike. ...Mark the shapes that are alike.
32. "Look at the cars going into the tunnel. Mark the car that is not the first or the last....Mark the car that is not the first or the last.
- "Now turn the page and find the gray box with the scissors in it."

Demonstrate and point to the box.

33. "Look at the chair, the apple, and the cookies. Mark what a child should never eat....Mark what a child should never eat.
34. "Look at the table. Make an X below the table....Make an X below the table.
35. "Look at the boxes and the balls. Mark the ball that matches one of the boxes.... Mark the ball that matches one of the boxes.
36. "Look at the dog, the book, and the ear. Mark the one a child always has....Mark the one a child always has.
- "Now find the gray box with the pencil in it."

Point to the box on the right-hand page.

37. "Look at the fish. Mark the fish that is medium-sized....Mark the fish that is medium-sized.

38. "Look at the boxes and the line. Mark the box that is over the right end of the line.. Mark the box that is over the right end of the line.
39. "Look at the boys. Mark the boy who is bending forward....Mark the boy who is bending forward.
40. "Look at the boxes and candies. Mark the box that has zero candies....Mark the box that has zero candies.
- "Now turn the page. Find the gray box with the hat in it."

Demonstrate.

41. "Look at the cloud and the airplanes. Mark the airplane that is above the cloud.... Mark the air-plane that is above the cloud.
42. "Look at the pictures of bowls and spoons. Mark the picture that shows a spoon in every bowl....Mark the picture that shows a spoon in every bowl.
43. "Look at the beads. Mark the beads that are separated....Mark the beads that are separated.
- "Now find the gray box with the light bulb in it."

Point to the box on the right-hand page.

44. "Look at the birds. Mark the bird on the left....Mark the bird on the left.

45. "Look at the pictures of candles. Mark the picture that shows a pair of candles....Mark the picture that shows a pair of candles.
46. "Look at the boxes. One box has an X in it. Skip a box and make another X....Skip a box and make another X.
47. "Look at the pictures of lollipops. Mark the pictures that have equal numbers of lollipops....Mark the pictures that have equal numbers of lollipops.
- "Now turn the page. Find the gray box with the bottle in it."

Demonstrate.

48. "Look at the boxes of circles. Mark the box where the circles are in order from large to small....Mark the box where the circles are in order from large to small.
49. "Look at the teacher and the children. Mark the third child from the teacher....Mark the third child from the teacher.
50. "Look at the groups of stars. Mark the group that has the least stars....Mark the group that has the least stars."



APPENDIX 2 and 3ANALYSIS OF ITEMS IN INDIVIDUAL CHECKLIST FOR  
KINDERGARTEN.

<u>Item No.</u>	<u>Hyperactivity and Distractibility (4 items)</u>
1.	Difficulty sustaining attention (easily bored).
10.	Loses interest quickly - moves from one activity to another.
20.	Uninhibited speaker, often calls out.
57.	Is extremely active, has to be always 'on the go'.
	<u>Laterality. (2 items)</u>
4.	Is ambidextrous (uses right hand for some activities, left for others.)
19.	Is left-handed.
	<u>Speech (1 item)</u>
3.	Has poor speech.
	<u>Auditory Perception (3 items)</u>
2.	Has difficulty remembering rhymes.
13.	Has difficulty ordering thoughts when describing or discussing a topic.
29.	Forgets instructions or message and has to ask again.
	<u>Visual Motor Co-ordination (4 items)</u>
5.	Has difficulty controlling pencil or crayon.
11.	Clumsy, (bumps into objects, has more than his share of falls).

Item No.

24. Unable to fasten buttons.
35. Has difficulty in hopping or changing  
from one foot to another.
- Apathetic and Withdrawn Behaviour  
(17 items).
6. Not much liked by other children.
7. Needs aid for each step of an activity.
15. Is fearful in approaching other children.
17. Is tense and jittery in everyday  
situations.
21. Appears worried, seems sad.
23. Demonstrates little interest in things  
and activities.
25. Is listless and apathetic.
28. Preoccupied in own world to point of  
being unresponsive to others and  
things.
31. Wanders around looking around aimlessly.
33. Is bossed and dominated by other  
children.
36. Hardly speaks at all.
40. Gives up easily if confronted with  
difficulty.
42. Acts overly cautious and fearful.
45. Stays close or clings to mother or  
teacher.
47. Occupies himself very much with one  
type of activity and resists others.

Item No.

- 49. Exhibits drowsiness throughout the day.
- 52. Has distant and aloof manner.
- Angry and Defiant Behaviour (16 items)
- 8. Seeks adult attention by crying.
- 12. Gets very angry if 'crossed'.
- 16. Is quarrelsome?
- 17. Is tense and jittery in everyday situations.
- 27. Bullies, hits or picks on other children.
- 32. Has difficulty keeping to the rules of the game.
- 34. Appears jealous when teacher pays attention to other children.
- 38. Is destructive in regard to his own and/or other's property.
- 43. Dawdles when required to do something.
- 44. Talks about death and killing.
- 48. Has difficulty leaving school at the end of the day.
- 51. Seeks attention through 'showing off' behaviour.
- 52. Has temper tantrums.
- 56. Disobeys directions or instructions of adults.
- 57. Is extremely active, has to be always 'on the go'.
- 58. Answers teacher or other adult back (or swears) in defiant manner.

<u>Item No.</u>	<u>Normal behaviour: Social and emotional:</u> <u>Good adjustment for learning. (13 items)</u>
9.	Is responsible in carrying out requests.
14.	Easily makes change from one activity to another.
18.	Is eager to try new things.
22.	Co-operates with rules and regulations.
26.	Puts things away carefully.
30.	Willing to turn to other children for help.
37.	Remains alert and interested in any activity.
39.	Can be independent of adults in having ideas and planning activities.
41.	Gets willing co-operation from most other children.
46.	Other children copy his ideas for play.
50.	Seems to enjoy play both with others and by himself.
53.	Responds immediately to teacher's direction.
55.	Can accept teacher's ideas and suggestions for play or ways of playing.

APPENDIX 3      Analysis of Items in Notice to Parents  
of Kindergarten Children. (Questionnaire for  
Parents.)

<u>Question No.</u>	<u>Hyperactivity and Distractibility (3 items)</u>
5.	Does he/she lose interest in activities quickly?

Question No.

11. Is he/she restless or unable to sit still?
24. Is he/she extremely active, has to be always 'on the go'?

Laterality (2 items)

8. Is he/she left-handed?
9. Is he/she ambidextrous (right-handed for some things, left for others)?

Speech (2 items)

13. Did he/she speak later than you consider usual?
14. Is his/her speech normal now?

Auditory Perception (2 items)

1. Does he/she have difficulty remembering rhymes?
15. Does he/she forget instructions or messages and have to ask again?

Visual Motor Co-ordination (2 items)

2. Is he/she able to fasten buttons?
33. Is he/she clumsy, has more than his share of falls or breakages?

Apathetic and Withdrawn Behaviour  
(10 items)

3. Does he/she need help of another child or parent in playing most games?
6. Is he/she shy of other children?
7. Does he/she defend himself when others shove, hit or criticise him?
17. Does he/she avoid being the leader in games and activities?

Question No.

23. Does he/she usually play alone?
25. Are his/her feelings easily hurt?
26. Does he/she like to stay close to  
mother or other well known adult?
27. Does he/she give up easily when  
confronted with a difficulty?
35. Is he/she shy of strange adults?
38. Does he/she fear making mistakes?
- Angry and Defiant Behaviour (10 items)
5. Does he/she lose interest in activities  
quickly?
11. Is he/she restless or unable to sit  
still?
12. Did he/she cry a lot at home?
16. Does he/she have tantrums, hit, kick  
etc.
18. Does he/she dawdle when required to  
do something?
20. Does he/she have trouble going to  
sleep?
24. Is he/she extremely active, has to be  
always 'on the go'?
28. Does he/she get angry with toys and  
play things and smash them?
30. Does he/she often disobey you?
31. Does he/she get easily irritated or  
bothered by things or by people?

Question No.Normal behaviour (8 items)

- 4. Is he/she eager to try new things.?
- 10. Does he/she like to be the leader in  
games and activities?
- 19. Is he/she popular with other children?
- 21. Can he/she wash his face and hands  
himself?
- 22. Does he/she seem to enjoy playing by  
himself and with others?
- 29. Do other children copy his/her ideas  
for play?
- 32. Is he/she responsible in carrying out  
requests or instructions?
- 34. Can he/she plan activities and games  
without help from other children  
or adults?

Summary of results of Individual Check List for Kindergarten, Questionnaire to Parents, Boehm Test of Basic Concepts, and the Draw-a-Man Test. The boys and girls are shown separately, and within each section they are listed from youngest to eldest.

		Hyperactivity	or	Distractibility	Auditory	Perception	Visual Motor	Co-ordination	Normal-Social	& Emotional	Adjustment	Apathetic &	Withdrawn	Angry & Defiant	Speech	Dominance	Draw-A-Man	Concepts Test (Boehm)
Girls																		
Kim	Teacher	12	9	12	39	48	33	3	R	8	34							
	Parent	1	0	0	6	3	5	0	R									
Wendy		12	9	10	45	31	30	3	R	9	35							
		3	0	0	8	3	3	0	R									
Jennifer		12	5	8	39	43	37	3	L	25	40							
		3	0	0	7	3	5	0	L									
Linda		12	9	11	39	51	41	3	R	8	26							
		0	0	0	7	2	1	0	R									
Justine		14	9	12	44	49	40	3	R	13	30							
		2	0	0	8	4	5	0	R									
Elizabeth		13	8	8	42	44	35	3	R	11	29							
		3	0	0	7	4	5	0	R									
Lisa (No.1)		14	11	12	43	48	52	3	R	13	36							
		1	0	0	7	1	2	0	R									
Jo-Anne		19	11	8	50	37	61	3	R	12	32							
		3	0	0	8	1	6	0	R									
									(A)**									
Louise		17	12	15	31	61	49	3	R	8	22							
		3	1	1	5	3	6	0	R									
Kathleen		17	8	10	40	32	50	3	R	15	40							
		2	0	0	8	1	6	0	R									
									(A)									

\* The top score refers to development of speech and the bottom one to present speech.

\*\* Right handed for some things, left for others but tendency toward lateracy shown.



Girls	Hyperactivity or Distractibility	Auditory Perception	Visual Motor Co-ordination	Normal-Social & Emotional Adjustment	Apathetic & Withdrawn	Angry & Defiant	Speech	Dominance	Draw-A-Man	Concepts Test (Boehm)
Lisa (No.2) T.	9	5	8	55	23	27	1	L (A)	5	36
P.	0	0	0	6	6	1	0 0	L (A)		
Lee-Anne	15	7	5	45	37	31	1	R	13	40
	3	1	0	8	5	7	0 0	R		
Teresa	6	4	4	49	27	21	1	R	19	45
	0	0	0	8	1	0	0 0	R		
Teena	14	10	13	36	52	49	3	R	12	27
	2	0	0	8	1	2	0 0	R		
Kylie	12	9	9	37	54	43	3	R	12	32
	2	0	1	7	2	5	0 0	R		
Mandy (Twin)	9	6	10	46	39	32	3	R	13	33
	2	1	1	2	4	4	0 0	R		
Jan (Twin)	10	10	10	44	47	26	4	R	11	26
	1	1	0	7	5	6	0 0	R		
Sonya	12	10	7	41	44	33	1	R	13	33
	3	0	0	6	6	7	0 0	R		
Lyn-Maree	12	13	13	33	59	43	1	R	8	34
	1	0	0	6	3	4	0 0	R (A)		

Boys		Hyperactivity or Distractibility	Auditory Perception	Visual Motor Co-ordination	Normal-Social & Emotional Adjustment	Apathetic & Withdrawn	Angry & Defiant	Speech	Dominance	Draw-A-Man	Concepts Test (Boehm)
Matthew	T.	12	10	12	41	49	35	3	R	10	20
	P.	3	1	1	5	4	5	$\frac{0}{1}$	R		
Rodney		9	10	14	33	62	33	3	L	15	33
		1	1	2	5	6	7	$\frac{1}{0}$	L (a)		
Brendon		15	9	13	37	56	47	3	R	7	11
		3	0	0	8	4	6	$\frac{0}{0}$	R (A)		
Darren (No.1)		11	9	8	41	40	29	2	R	15	35
		3	1	0	6	5	8	$\frac{0}{0}$	R (A)		
Dale (No.1)		13	9	11	39	49	41	5	R	14	27
		1	0	0	6	1	3	$\frac{0}{0}$	R (A)		
Craig		12	9	11	39	48	34	3	R	9	29
		3	0	1	7	4	7	$\frac{0}{0}$	R		
Stewart		11	9	12	41	49	38	3	R	7	26
		2	1	0	7	1	6	$\frac{0}{0}$	R		
Darren (No.2)		9	10	7	37	50	25	1	R	5	34
		3	1	0	6	7	8	$\frac{0}{0}$	R (A)		
Glen (No.1)		9	7	8	51	28	24	1	R	17	32
		2	2	1	8	4	7	$\frac{0}{0}$	R		

Boys	Hyperactivity or Distractibility	Auditory Perception	Visual Motor Co-ordination	Normal-Social & Emotional Adjustment	Apathetic & Withdrawn	Angry & Defiant	Speech	Dominance	Draw-A-Man	Concepts Test (Boehm)
Mark (No.1)T.	16	12	10	41	47	49	3	R	7	21
P.	3	1	0	7	3	7	$\frac{0}{0}$	R		
Scott (No.1)	18	9	10	41	40	32	5	L	8	4
	1	0	0	7	1	3	$\frac{0}{0}$	L		
Dale (No.2)	16	9	13	35	43	47	3	R	8	22
	3	1	0	6	2	7	$\frac{0}{0}$	R		
Sean	19	13	18	34	55	42	4	L (A)	3	3
	1	1	2	2	8	4	$\frac{1}{1}$	L (A)		
Raymond	13	14	14	33	68	52	5	R (A)	7	12
	2	2	2	2	8	7	$\frac{1}{1}$	L (A)		
Dale (No.3)	13	12	13	33	57	55	4	L (A)	10	38
	2	0	1	7	5	4	$\frac{0}{0}$	L (A)		
Glenn (No.2)	13	13	16	47	51	41	4	L	8	8
	1	2	1	7	2	2	$\frac{0}{0}$	L		
Scott (No.2)	17	12	14	31	51	66	4	L (A)	4	14
	2	0	0	6	3	4	$\frac{0}{0}$	L (A)		

Boys		Hyperactivity or Distractibility	Auditory Perception	Visual Motor Co-ordination	Normal-Social & Emotional Adjustment	Apathetic & Withdrawn	Angry & Defiant	Speech	Dominance	Draw-A-Man	Concepts Test (Boehm)
Scott (No.3)	T.	10	9	12	56	33	39	3	R	9	25
	P.	0	0	0	8	3	1	$\frac{0}{0}$	R		
Tony		11	10	12	44	53	33	3	R	9	36
		3	1	0	8	2	4	$\frac{0}{0}$	R		
Alan		13	10	12	40	52	48	3	L	18	43
		1	0	0	6	4	4	$\frac{0}{0}$	L		
Vincent		12	9	13	39	53	48	3	R	15	37
		1	1	0	6	4	3	$\frac{0}{0}$	R		
Michael (No.1)		12	9	12	44	46	38	2	R	15	30
		0	0	0	8	3	0	$\frac{0}{0}$	R		
Mark (No.2)		13	13	15	29	55	56	5	L (A)	12	33
		1	1	0	2	4	7	$\frac{0}{0}$	L (A)		
David		12	9	12	39	51	48	3	L	13	31
		2	0	0	6	3	2	$\frac{0}{0}$	L (A)		
Darren (No.3)		11	9	12	39	51	48	3	R (A)	16	38
		2	1	2	3	7	8	$\frac{1}{1}$	L (A)		
Glen (No.3)		14	9	12	39	49	48	3	R	16	41
		3	1	1	8	7	6	$\frac{0}{0}$	R		



APPENDIX 5SCALE FOR MARKING THE DRAW-A-MAN TEST

One point for each concept included in the drawing.

1. Head present.
2. Legs present.
3. Arms present.
4. (a) Trunk present.  
(b) Length of trunk greater than breadth.  
(c) Shoulders indicated
5. (a) Both arms and legs attached to trunk  
(b) Legs attached to trunk, arms attached to trunk at correct point.
6. (a) Eyes present.  
(b) Nose present.  
(c) Mouth present.  
(d) Both nose and mouth shown in 2 dimensions,  
2 lips shown (2 lines)
7. (a) Hair shown.  
(b) Hair present on more than circumference  
of head - non-transparent method of  
representation - should be better than  
a scribble.
8. (a) Clothing present.  
(b) 2 articles of clothing present, non-transparent, hat or dots.  
(c) Costume complete without incongruities.
9. (a) Fingers shown.  
(b) Correct number of fingers shown.  
(c) Fingers shown in two dimensions, length  
greater than breadth and angle subtended  
by them not more than  $180^{\circ}$ .

- (d) Opposition of thumb shown.
  - (e) Hand shown as distinct from fingers and arms.
10. (a) Arm joints shown either elbow, shoulder or both.
- (b) Leg joint shown, either knee hip or both.
11. Feet or heels shown.
12. (a) Motor co-ordination. All lines reasonably firm for the most part meeting each other cleanly at points of junction. The degree of complexity of the drawing must be taken into account, a drawing with very few lines being scored more rigidly than one which involves much detail.
13. Bars present.
14. Eye detail, brow or lashes shown.
- (b) Eye detail, pupils shown.

Total points possible = 29.

## APPENDIX 6



# INDIVIDUAL CHECK LIST FOR KINDERGARTEN

NAME: ..... DATE OF BIRTH: ..... AGE: ..... SEX: .....

ADDRESS: ..... TEACHER: .....

Unusual family circumstances: .....

Does mother go out to work: .....

Physical disabilities/differences (including appearance): .....

Tick the category into which you think the child falls on each of the following characteristics or behaviour description. Please put only one tick against each item. Leave blank any you have had no opportunity to observe.

	NEVER	RARELY	AVERAGE	OFTEN	ALWAYS
1. Difficulty sustaining attention (easily bored).					
2. Has difficulty remembering rhymes.					
3. Has poor speech.					
4. Is ambidextrous (uses right hand for some activities, left for others).					
5. Has difficulty controlling pencil or crayon.					
6. Not much liked by other children.					
7. Needs aid for each step of an activity.					
8. Seeks adult attention by crying.					
9. Is responsible in carrying out requests, directions and routines.					
10. <del>Loses</del> interest quickly - moves from one activity to another.					
11. Clumsy (bumps into objects, has more than his share of objects).					
12. Gets very angry if 'crossed'.					
13. Has difficulty ordering thoughts when describing or discussing a topic.					
14. Easily makes change from one activity to another.					
15. Is fearful in approaching other children.					
16. Is quarrelsome.					
17. Is tense and jittery in everyday situations.					
18. Eager to try new things.					
19. Is left-handed.					
20. Uninhibited speaker, often calls out.					
21. Appears worried, seems sad.					
22. Co-operates with rules and regulations.					
23. Demonstrates little interest in things and activities.					
24. Unable to fasten buttons.					
25. Is listless and apathetic.					
26. Puts things away carefully.					
27. Bullies, hits or picks on other children.					

		NEVER	RARELY	AVERAGE	OFTEN	ALWAYS
28.	Preoccupied in own world to point of being unresponsive to others and things.					
29.	Forgets instructions or message and has to ask again.					
30.	Willing to turn to other children for help.					
31.	Wanders around looking around aimlessly.					
32.	Has difficulty keeping to the rules of the game.					
33.	Is bossed and dominated by other children.					
34.	Appears jealous when teacher pays attention to other children.					
35.	Has difficulty in hopping or changing from one foot to another.					
36.	Hardly speaks at all.					
37.	Remains alert and interested in any activity.					
38.	Is destructive in regard to his own and/or other's property.					
39.	Can be independent of adults in having ideas and planning activities.					
40.	Gives up easily if confronted with difficulty					
41.	Gets willing co-operation from most other children.					
42.	Act overly cautious and fearful.					
43.	Dawdles when required to do something.					
44.	Talks about death and killing.					
45.	Stays close or clings to mother or teacher.					
46.	Other children copy his ideas for play.					
47.	Occupies himself very much with one type of activity and resists others.					
48.	Has difficulty leaving school at the end of the day.					
49.	Exhibits drowsiness throughout the day.					
50.	Seems to enjoy play both with others and by himself.					
51.	Seeks attention through 'show off' behaviour.					
52.	Has distant and aloof manner.					
53.	Responds immediately to teacher's direction.					
54.	Has temper tantrums.					
55.	Can accept teacher's ideas and suggestions for play or ways of playing.					
56.	Disobeys directions or instructions of adults.					
57.	Is extremely active, has to be always 'on the go'.					
58.	Answers teacher or other adult back (or swears) in defiant manner.					

NOTICE TO PARENTS OF KINDERGARTEN CHILDREN

NAME: .....

In an attempt to help children settle into school more easily, we are studying children's skills and reactions when they start school. Would you help by answering the questions below in regard to your child in Kindergarten? Please return it to the teacher. 'Yes' and 'No' is printed against each question. Put a tick through whichever is most true for your child. Please try to answer every question. Here is an example of how to answer.

Yes/No My child goes to Abbotsfield Kindergarten.

Cecily Bell, Guidance Officer.

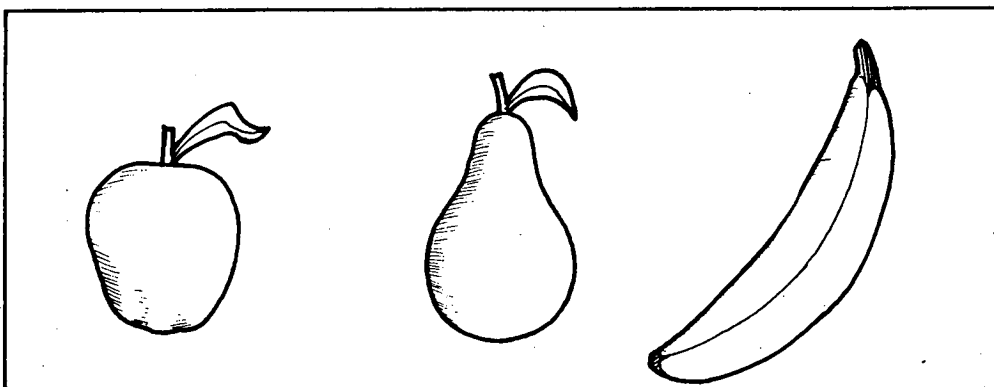
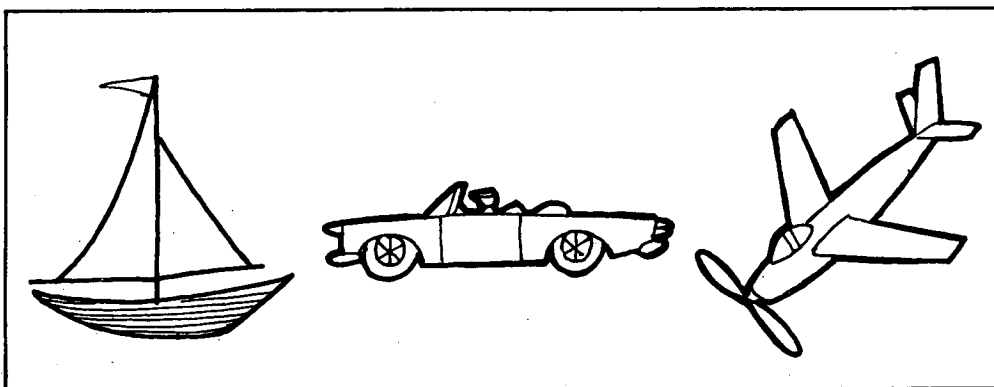
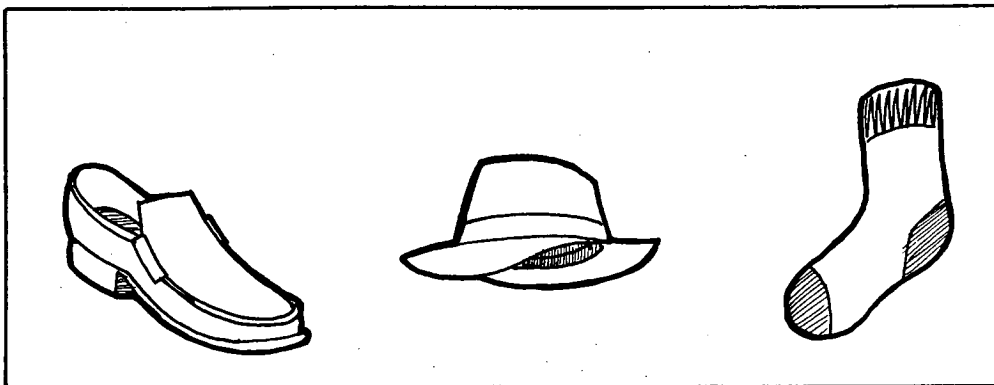
1. Yes/No. Does he/she have difficulty remembering rhymes?
2. Yes/No. Is he/she able to fasten buttons?
3. Yes/No. Does he/she need help of another child or parent in playing most games?
4. Yes/No. Is he/she eager to try new things.
5. Yes/No. Does he/she lose interest in activities quickly?
6. Yes/No. Is he/she shy of other children?
7. Yes/No. Does he/she defend himself when others shove, hit or criticise him?
8. Yes/No. Is he/she left-handed?
9. Yes/No. Is he/she ambidextrous (right-handed for some things, left for others)?
10. Yes/No. Does he/she like to be the leader in games and activities?
11. Yes/No. Is he/she restless or unable to sit still?
12. Yes/No. Does he/she cry a lot at home?
13. Yes/No. Did he/she speak later than you consider usual?
14. Yes/No. Is his/her speech normal now?
15. Yes/No. Does he/she forget instructions or messages and have to ask again?
16. Yes/No. Does he/she have tantrums, hit, kick etc.?
17. Yes/No. Does he/she avoid being the leader in games and activities?
18. Yes/No. Does he/she dawdle when required to do something?
19. Yes/No. Is he/she popular with other children?
20. Yes/No. Does he/she have trouble going to sleep?
21. Yes/No. Can he/she wash his face and hands himself?
22. Yes/No. Does he/she seem to enjoy playing both by himself and with others?
23. Yes/No. Does he/she usually play alone?
24. Yes/No. Is she/she extremely active, has to be always 'on the go'?
25. Yes/No. Are his/her feelings easily hurt?
26. Yes/No. Does he/she like to stay close to mother or other well-known adult?
27. Yes/No. Does he/she give up easily when confronted with a difficulty?

P.T.O.

28. Yes/No. Does he/she get angry with toys and play things and smash them?
29. Yes/No. Do other children copy his/her ideas for play?
30. Yes/No. Does he/she often disobey you?
31. Yes/No. Does he/she get easily irritated or bothered by things or by people?
32. Yes/No. Is he/she responsible in carrying out requests or instructions?
33. Yes/No. Is he/she clumsy, has more than his share of falls or breakages?
34. Yes/No. Can he/she plan activities and games without help from other children or adults?
35. Yes/No. Is he/she shy of strange adults?
36. Yes/No. Has he/she had any serious illnesses other than the usual childhood diseases, such as measles, chicken pox etc.
37. Yes/No. Has he/she been in hospital for longer than overnight?
38. Yes/No. Does he/she fear making mistakes?

NAME \_\_\_\_\_

Form **A**  
Booklet **1**



# BOEHM TEST of basic concepts

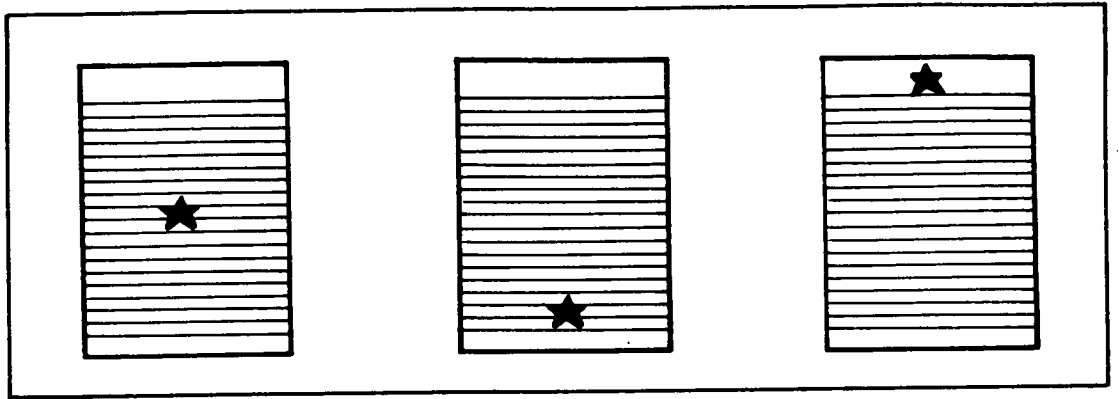
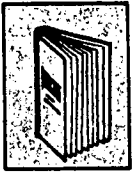
Ann E. Boehm



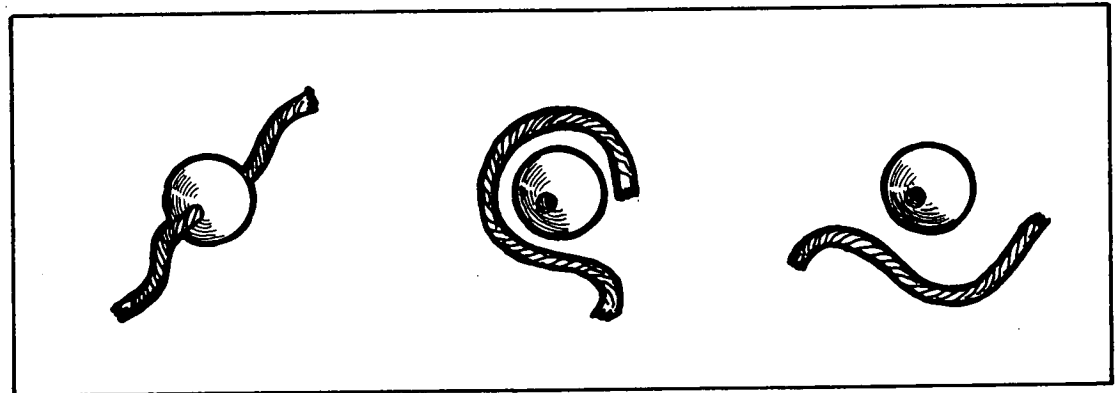
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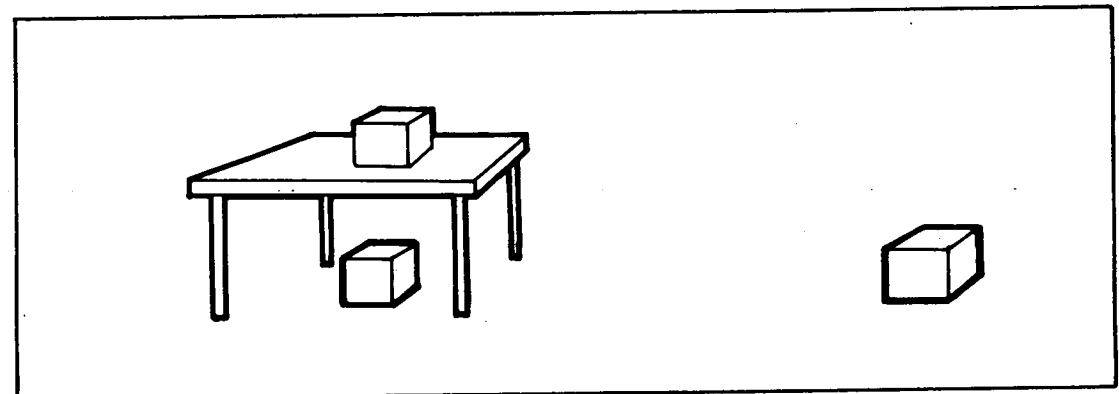
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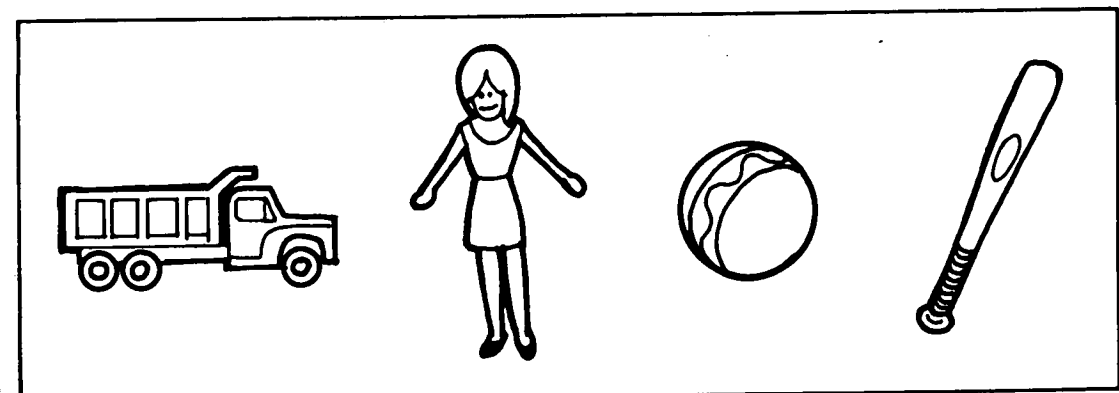
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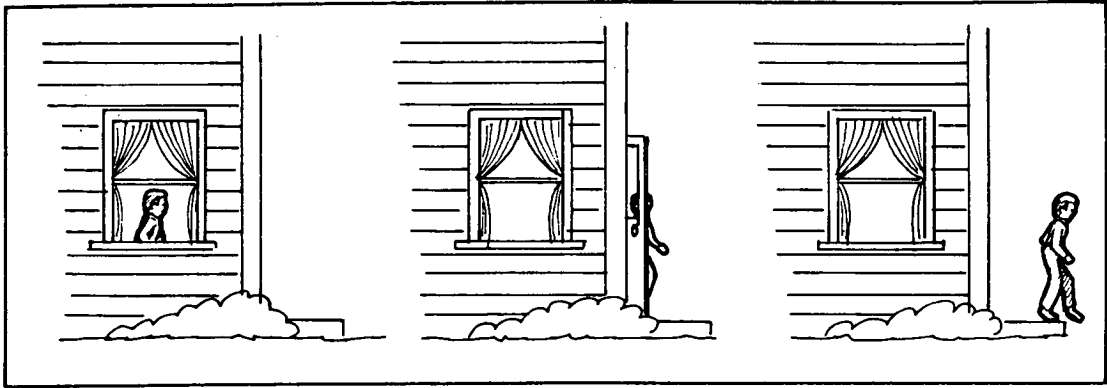


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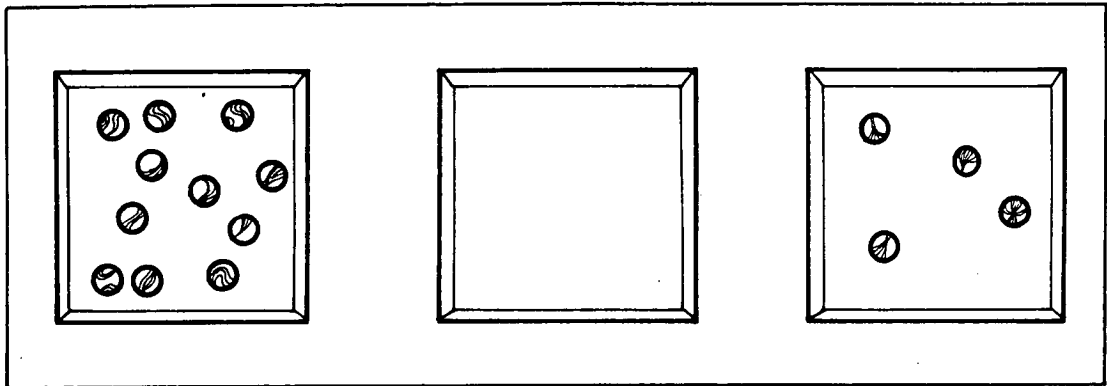




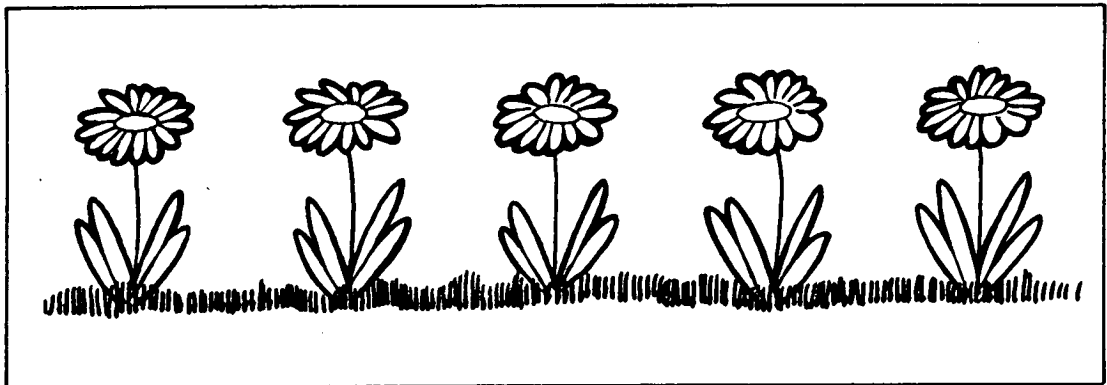
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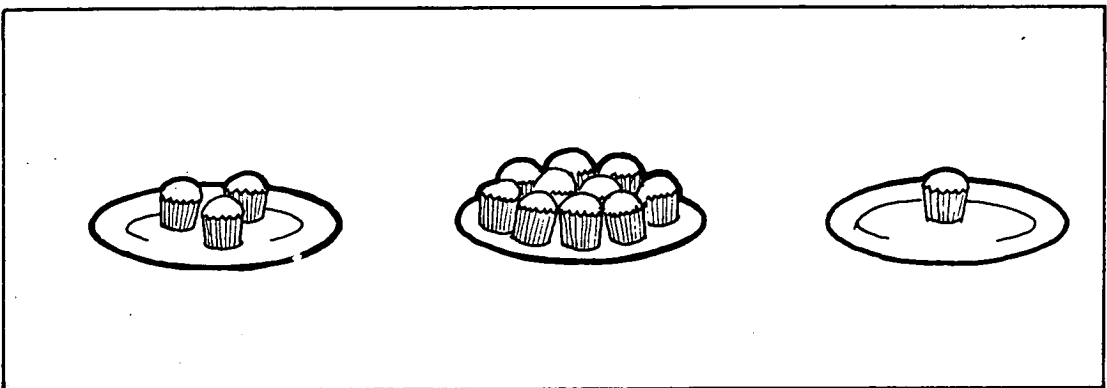
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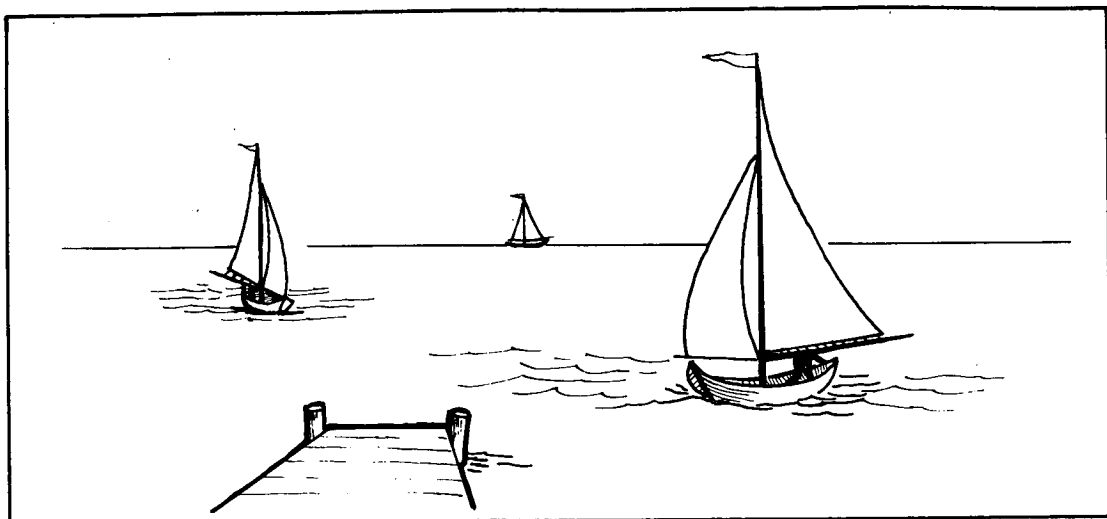


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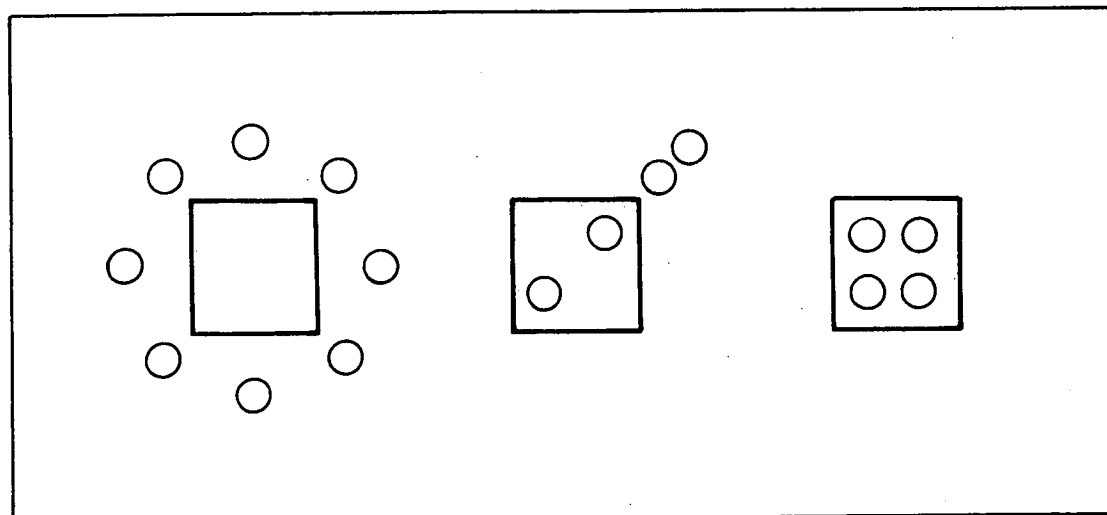




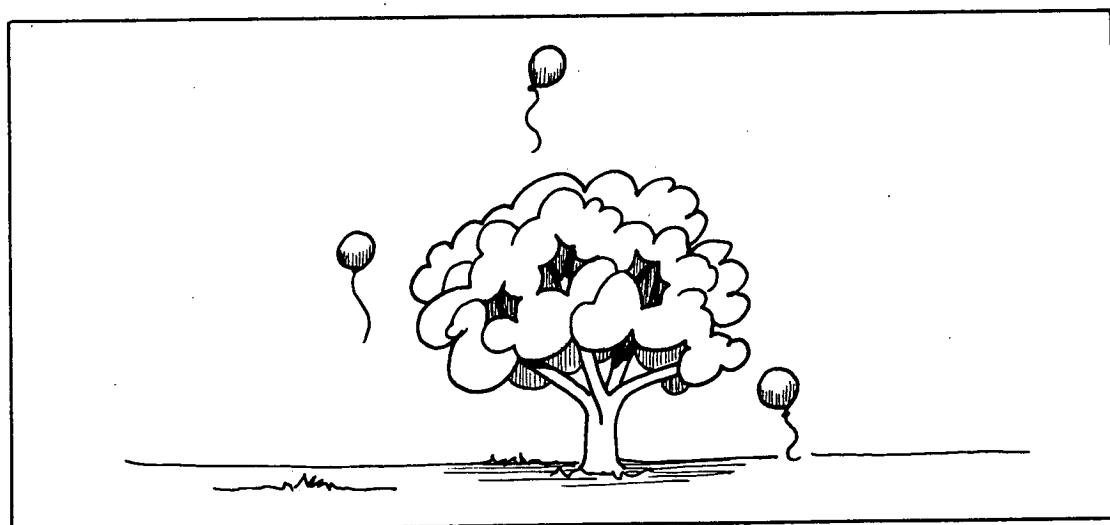
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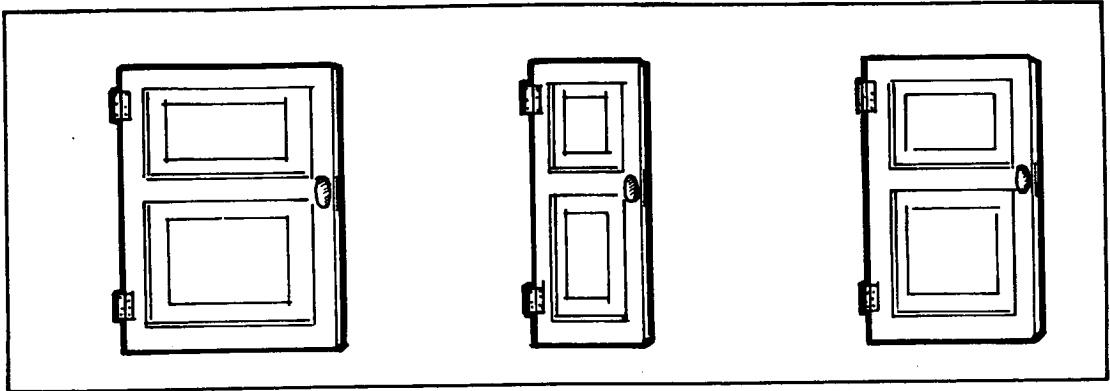
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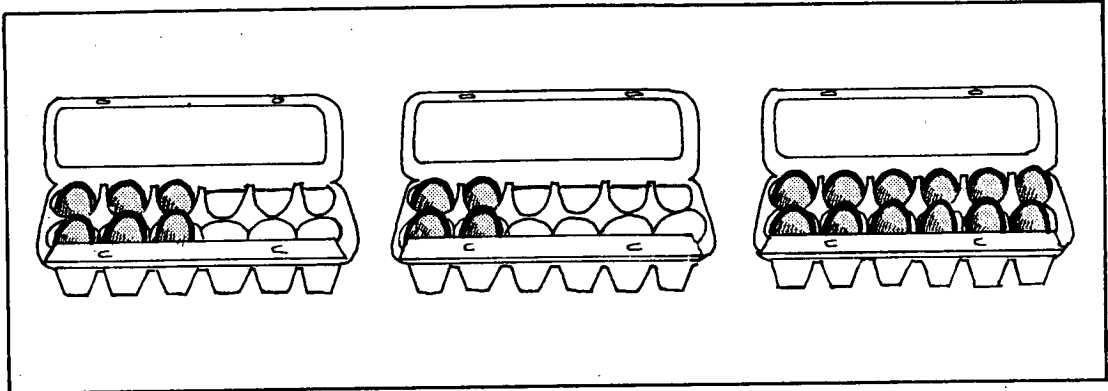
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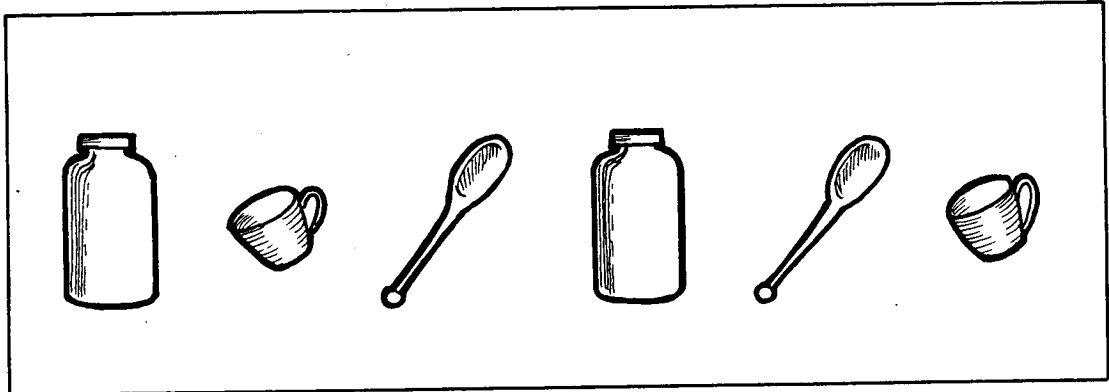




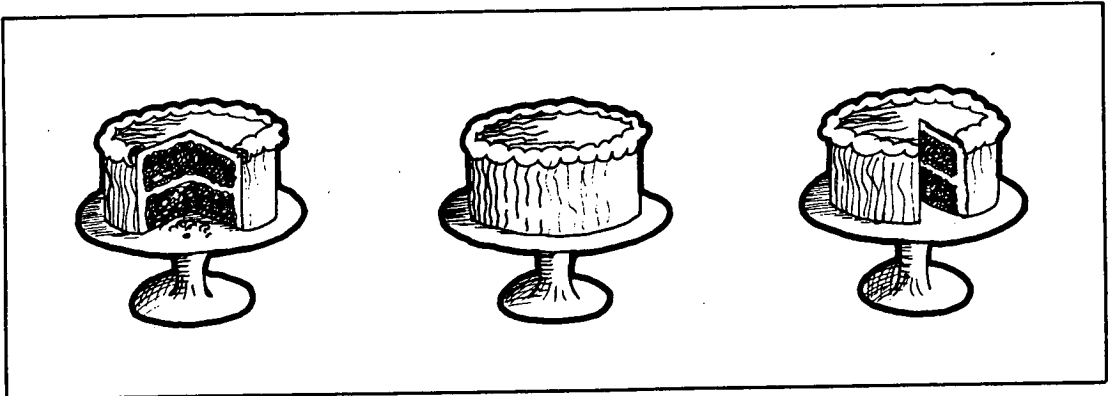
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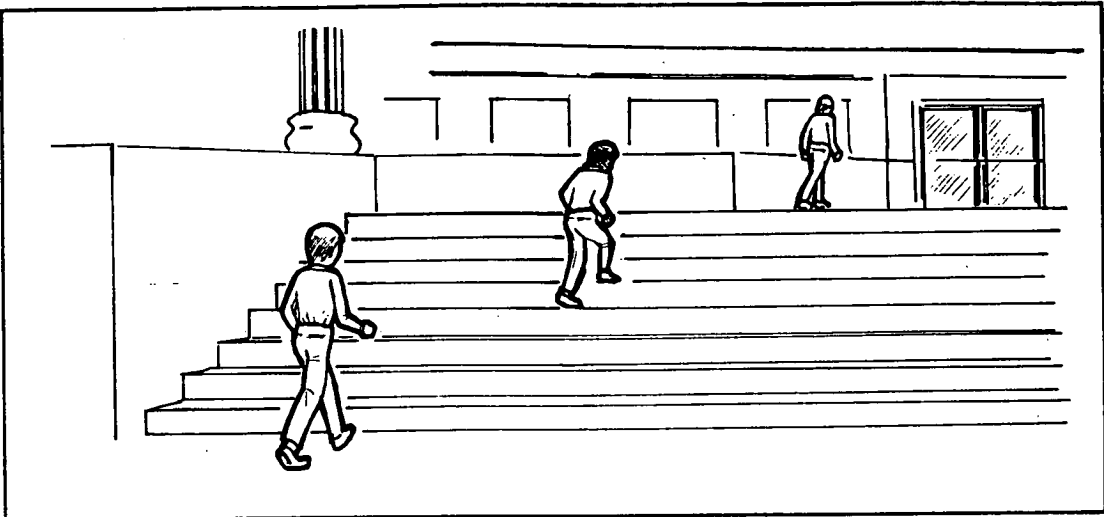
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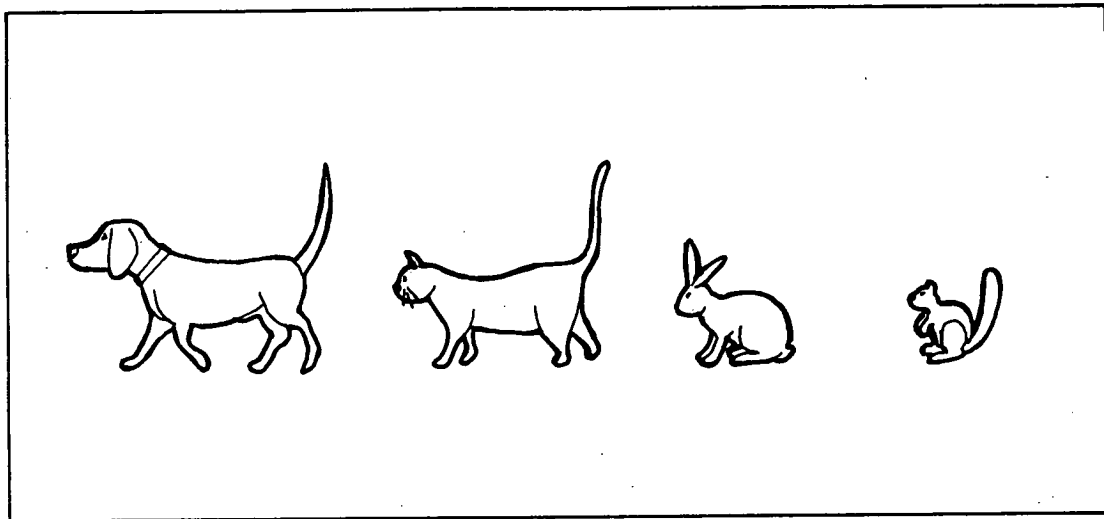
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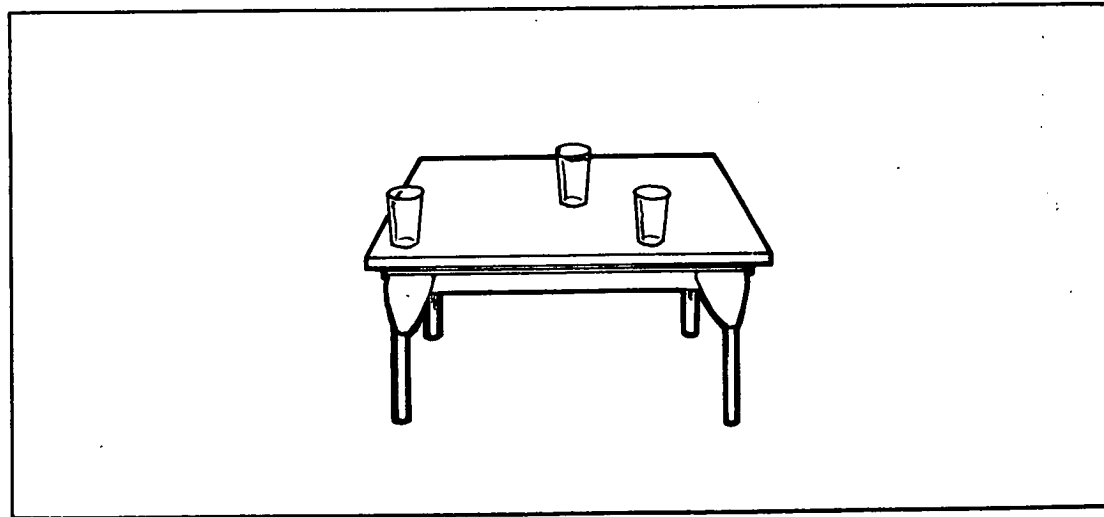
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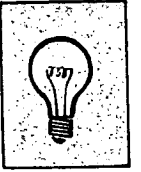
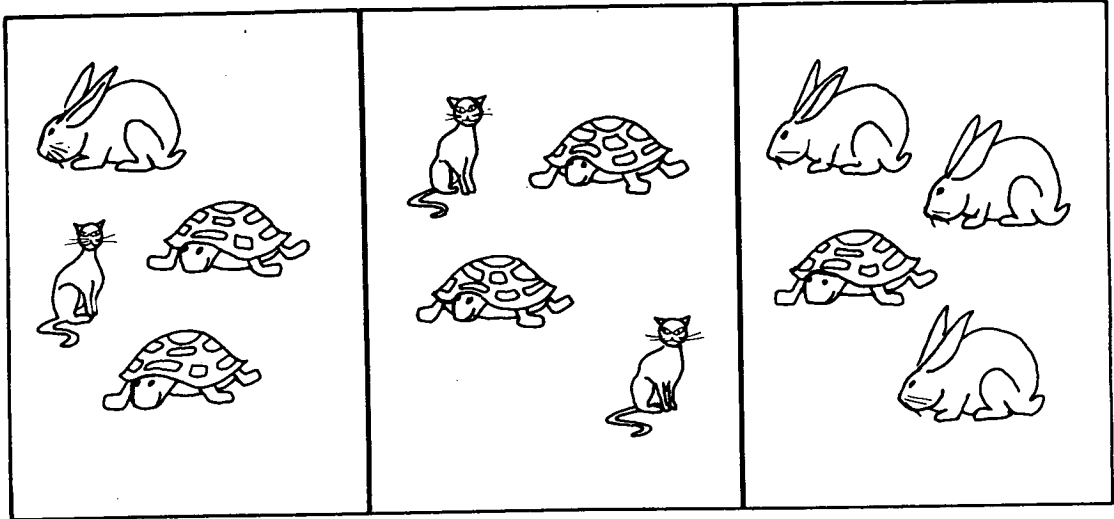
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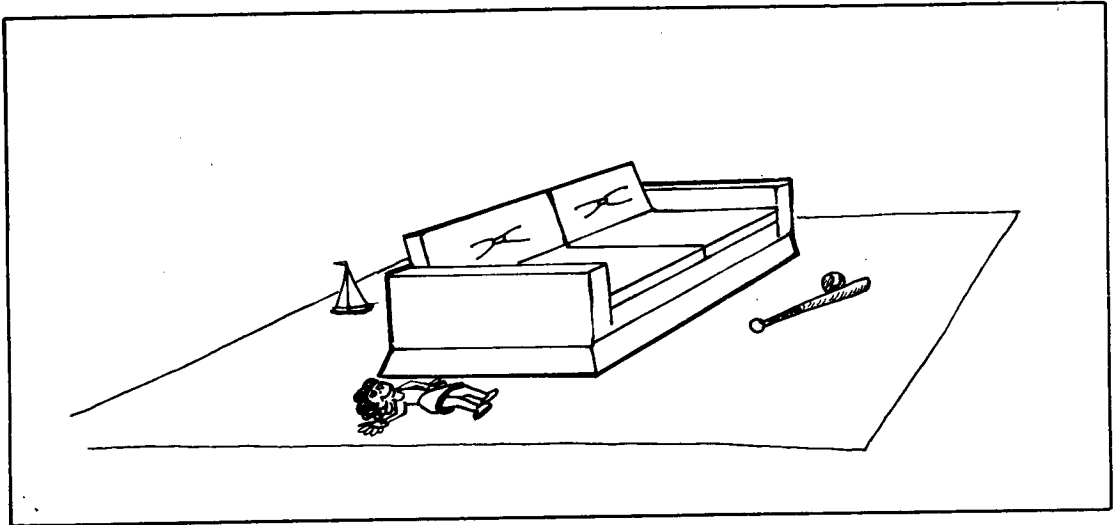
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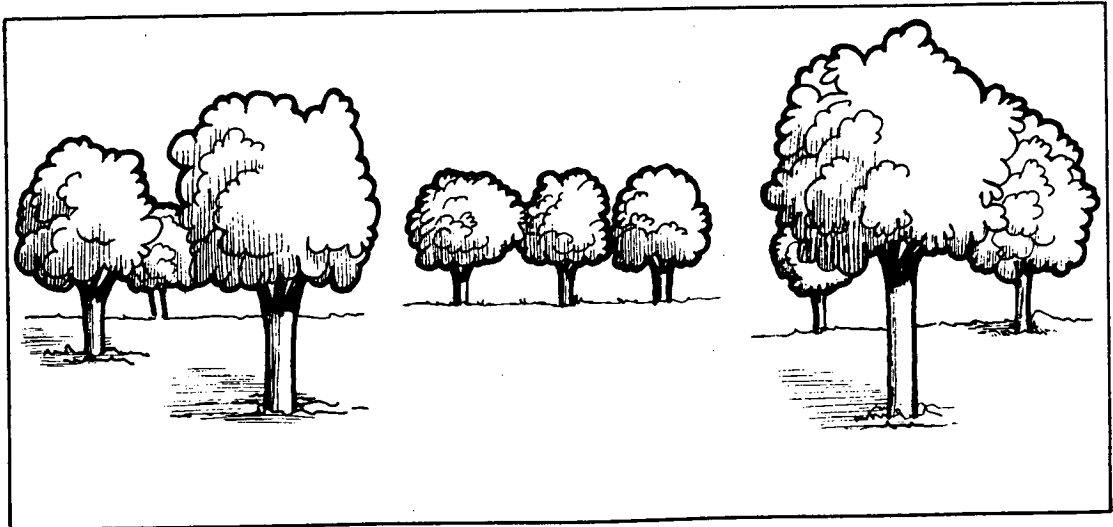
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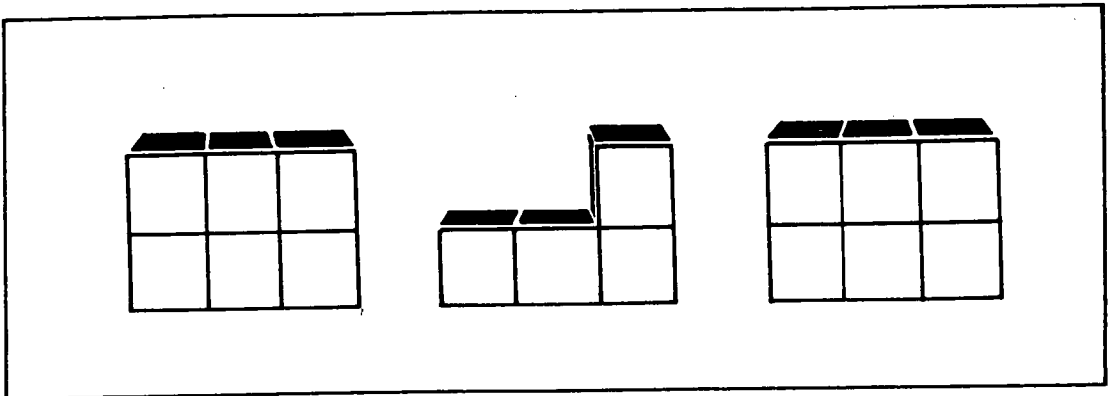
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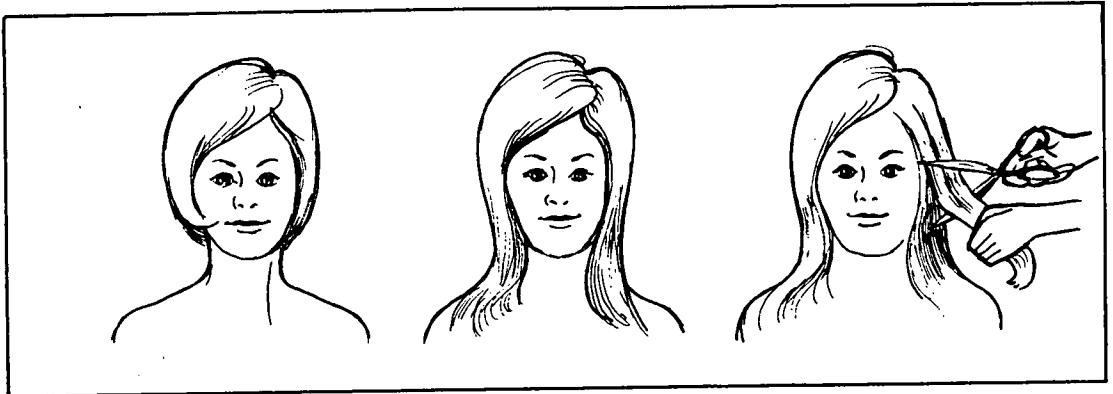
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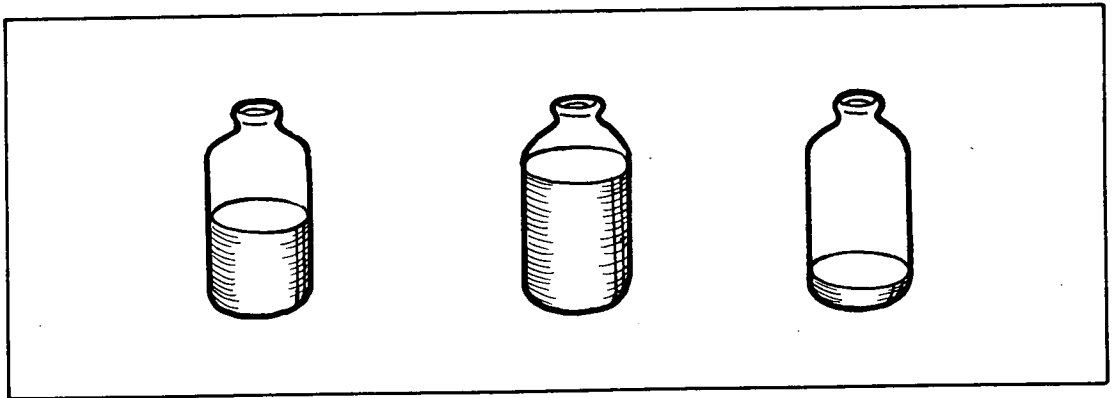
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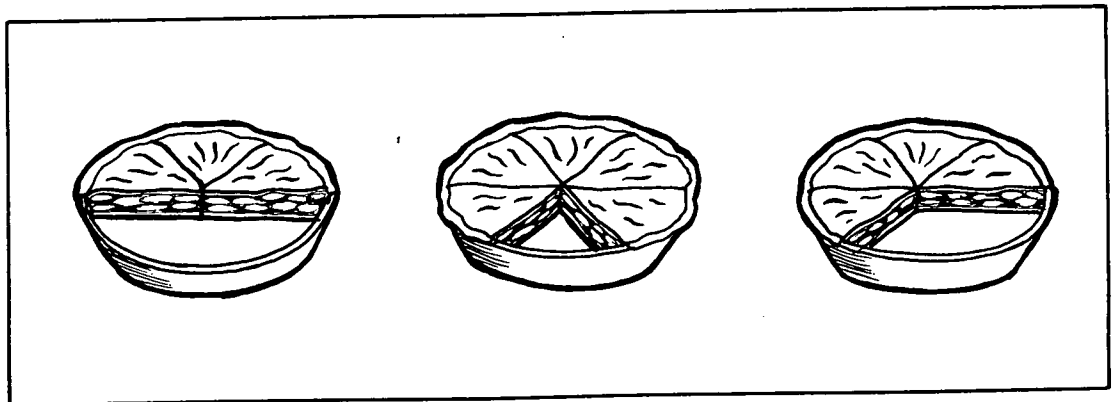
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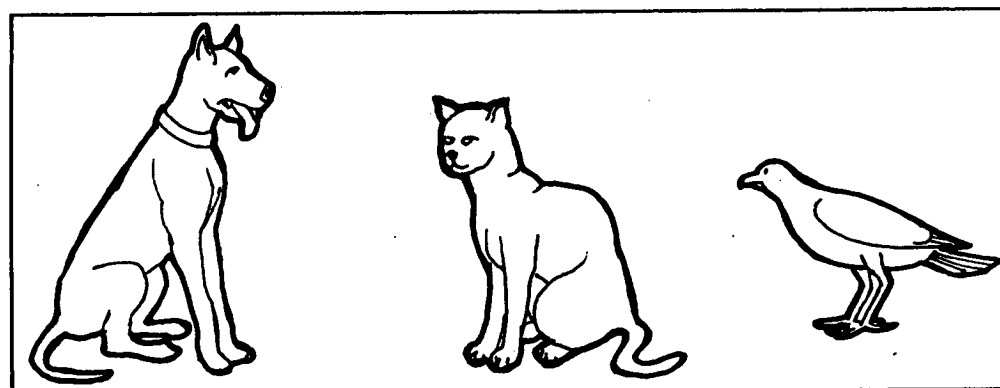
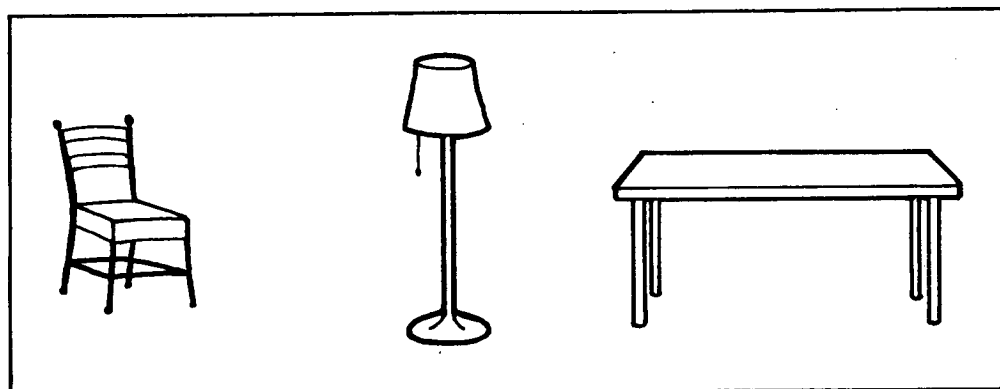
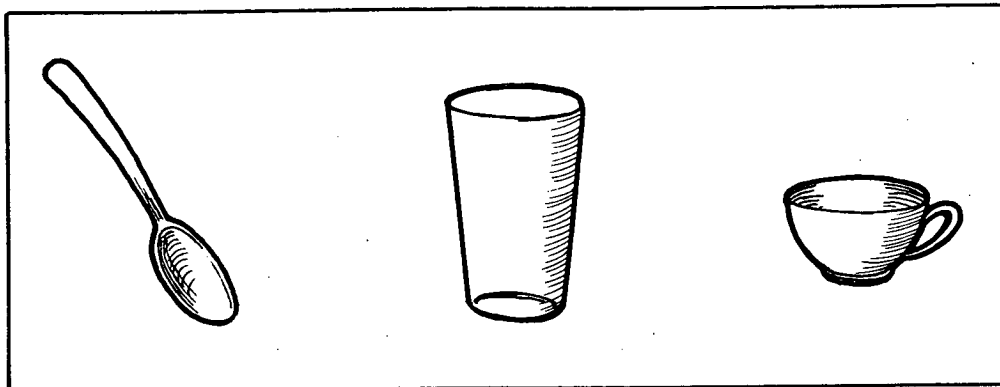
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# BOEHM TEST of basic concepts

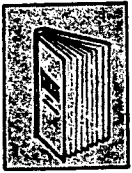
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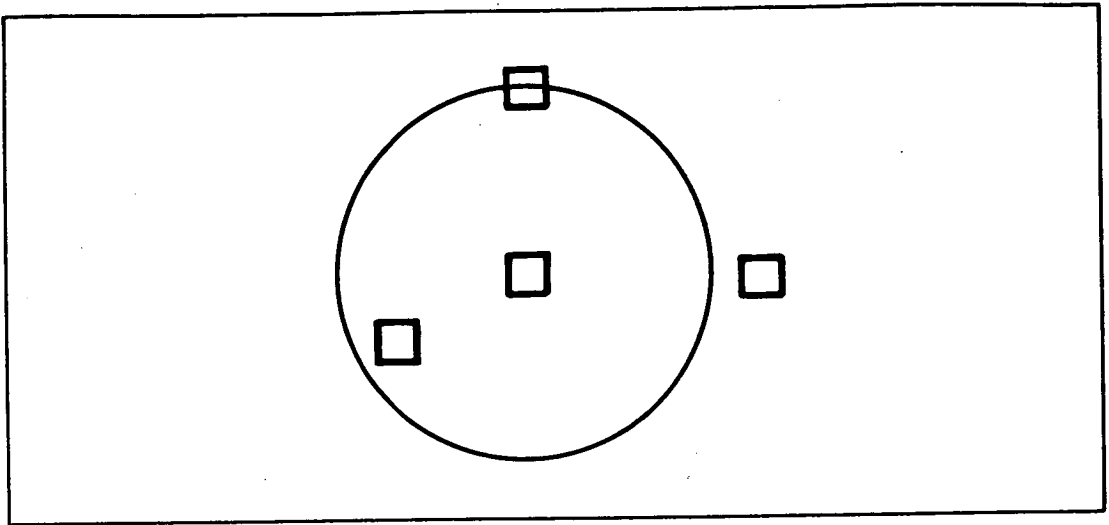
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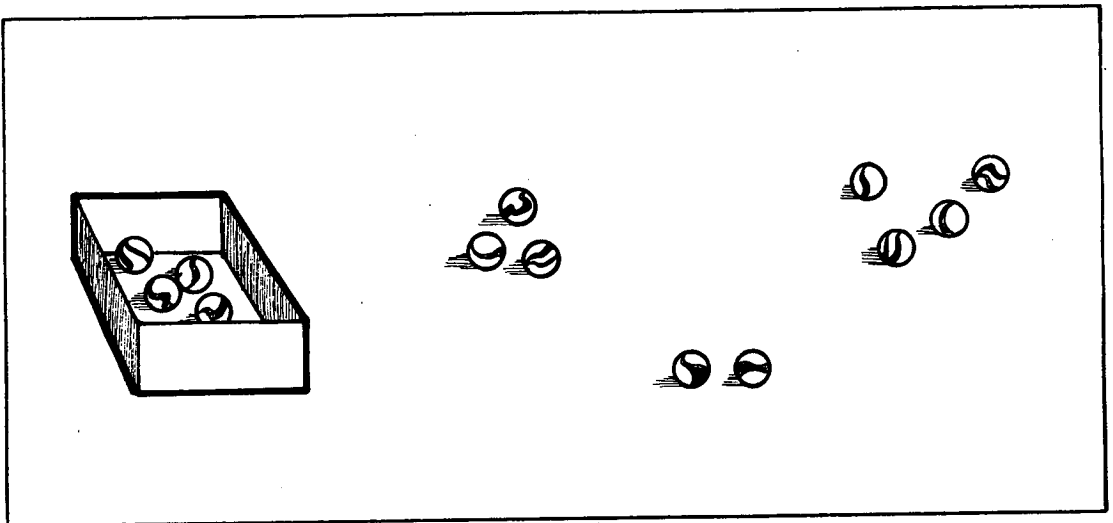
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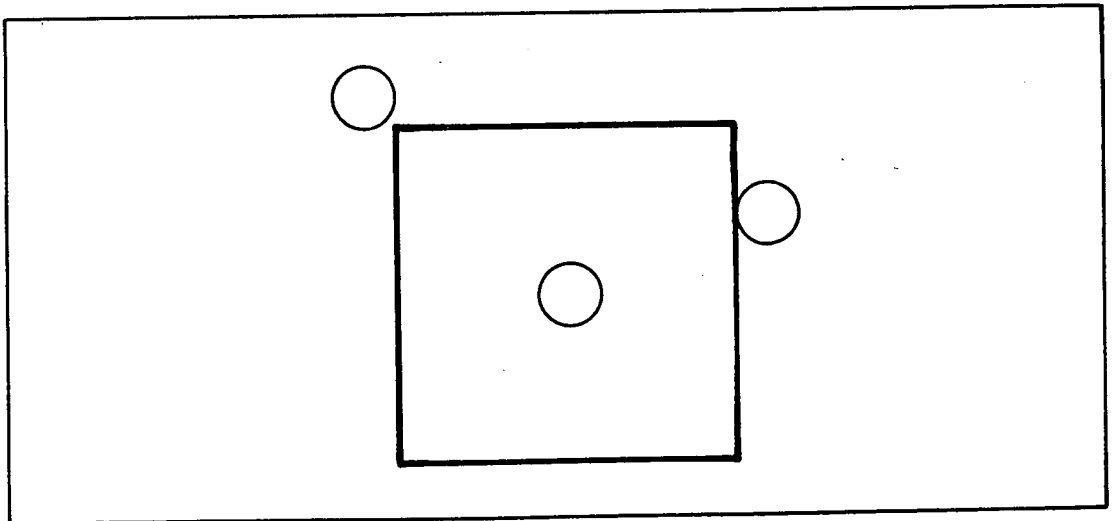
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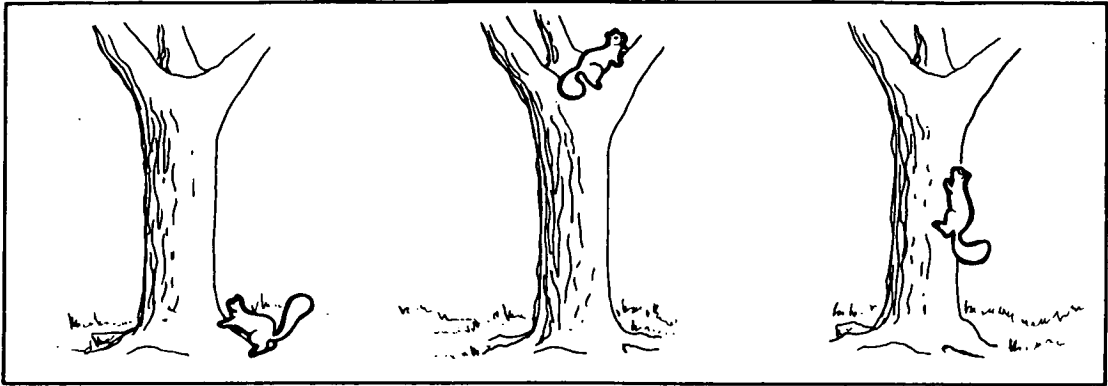


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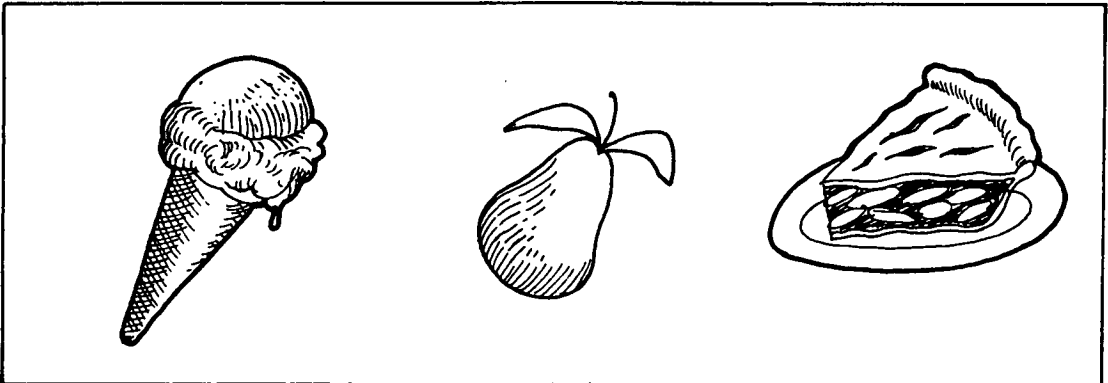




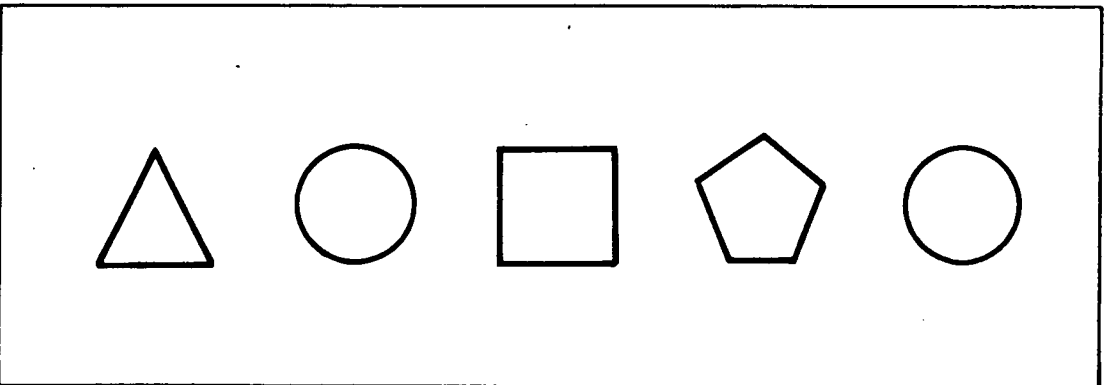
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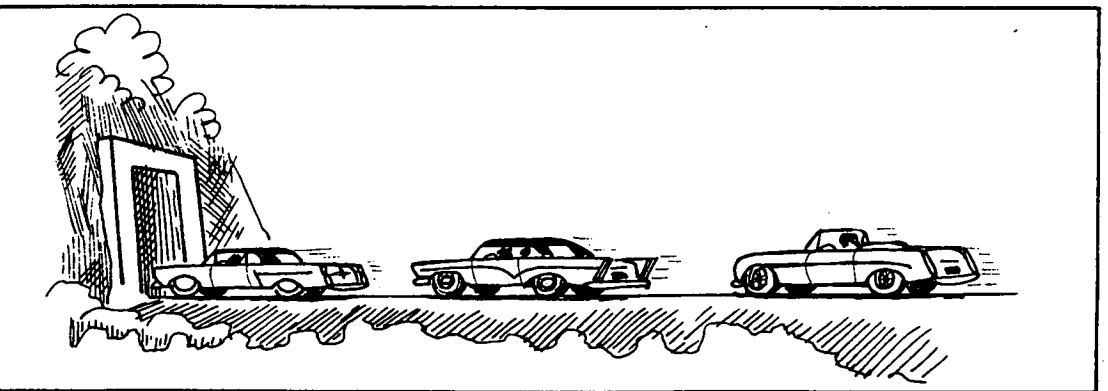
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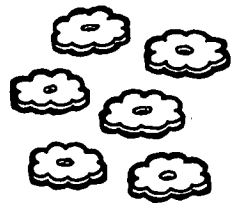
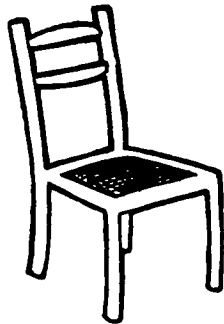


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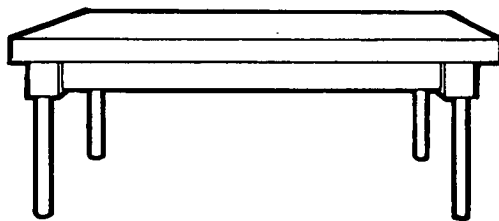




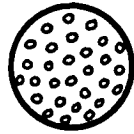
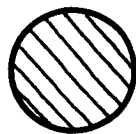
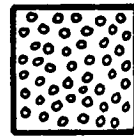
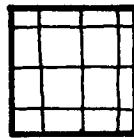
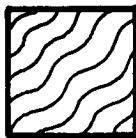
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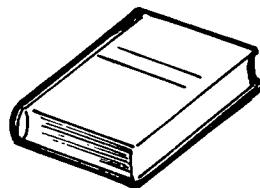
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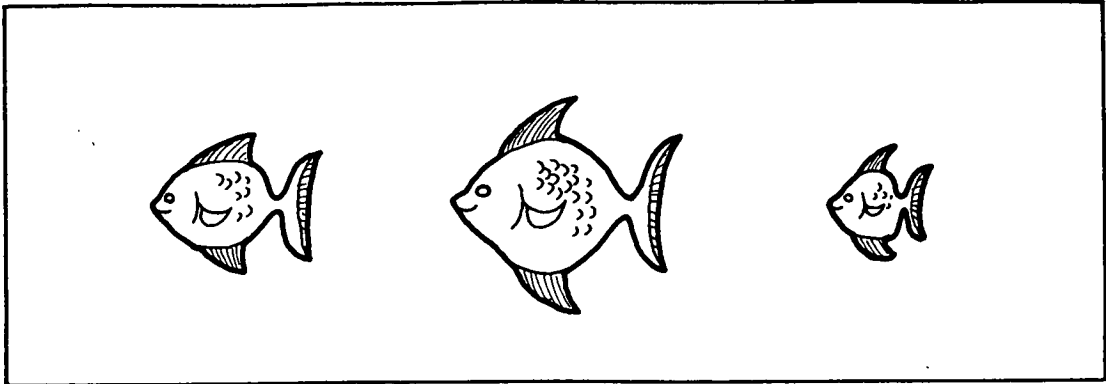
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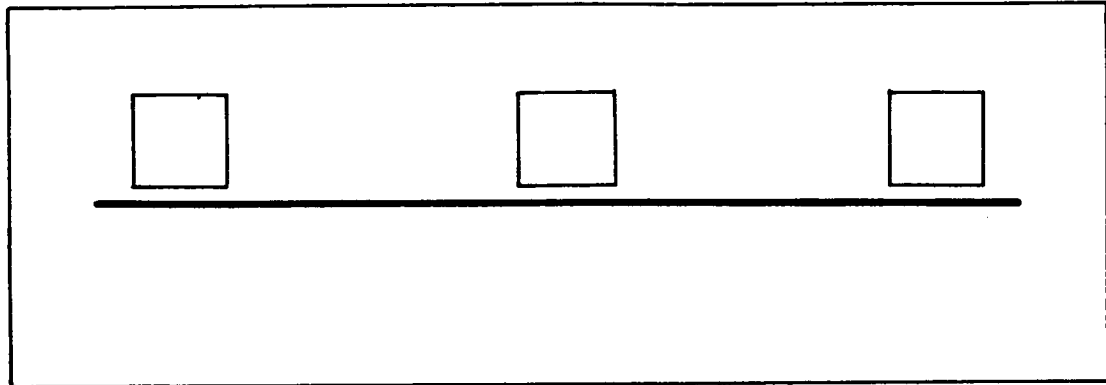




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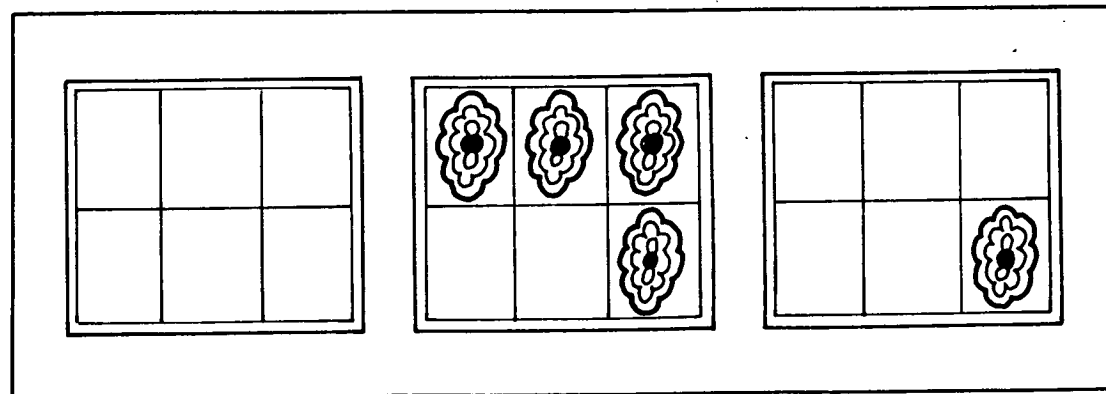
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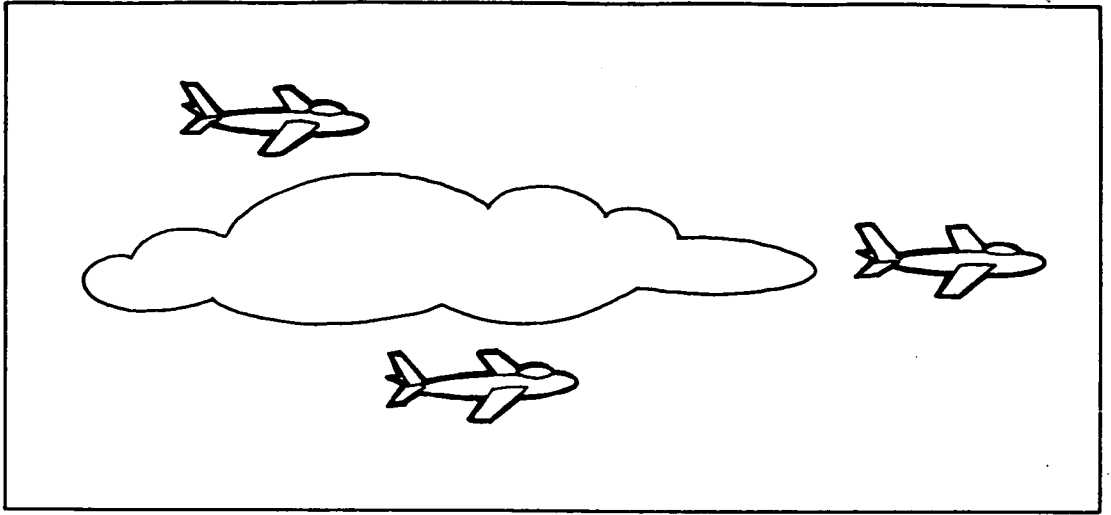


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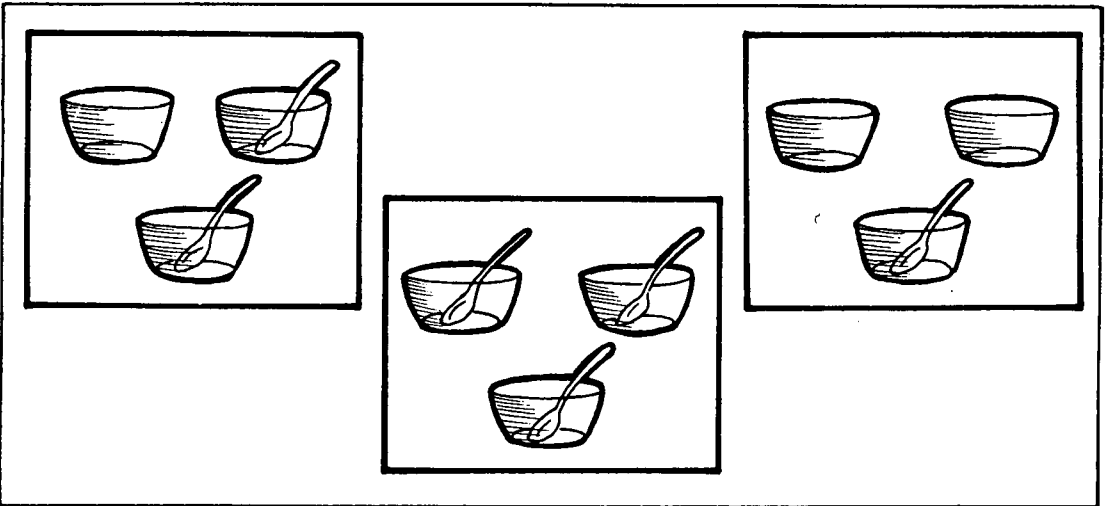


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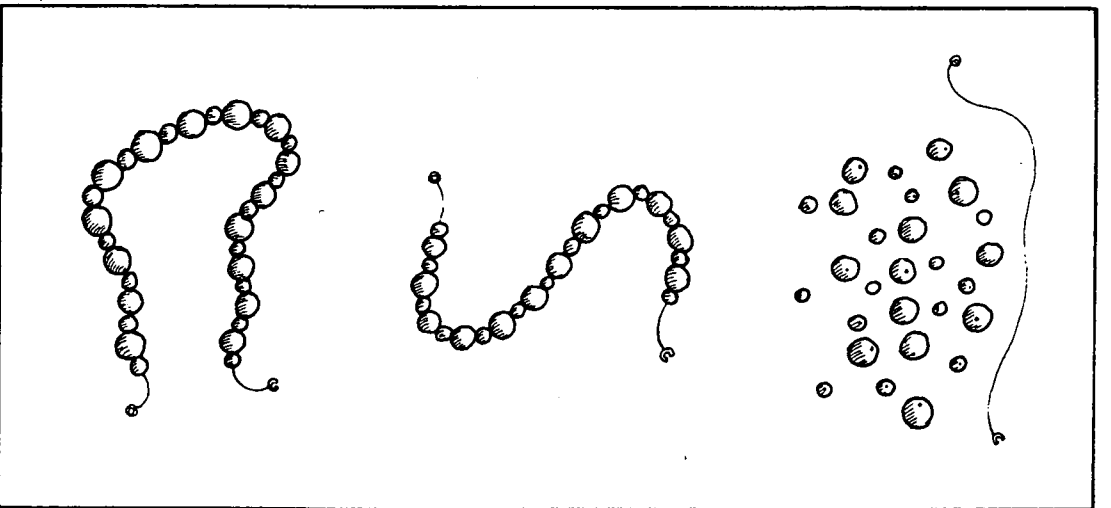




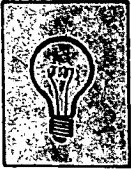
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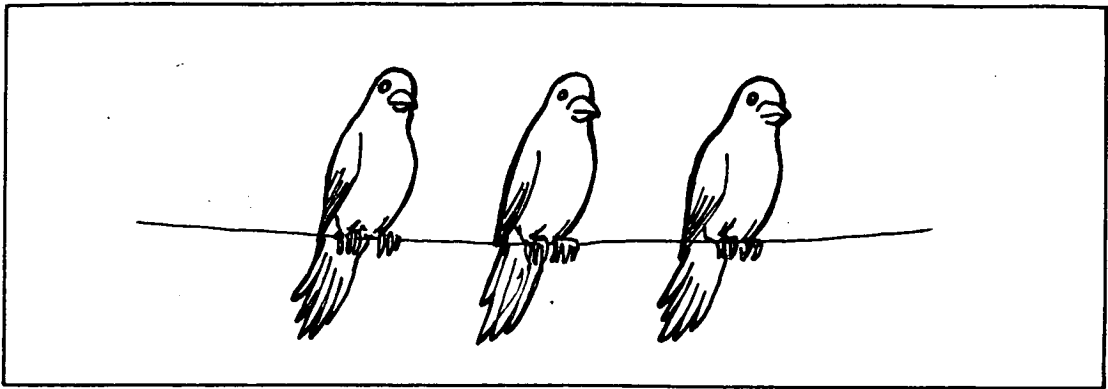
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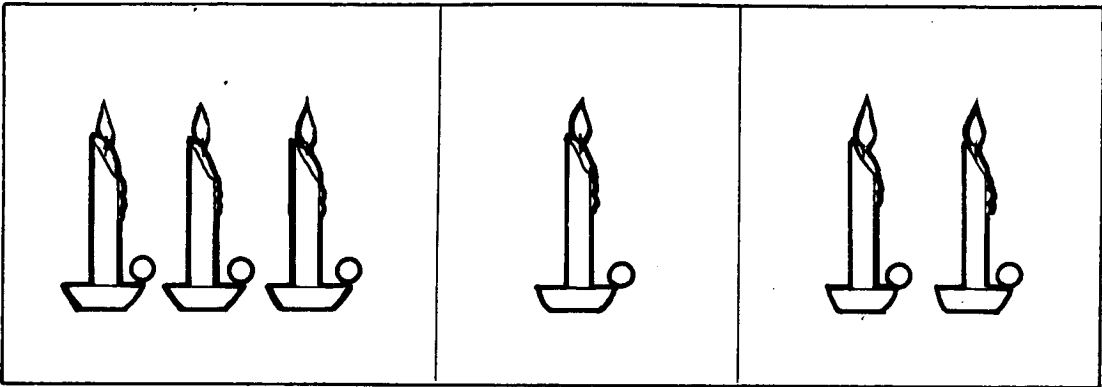
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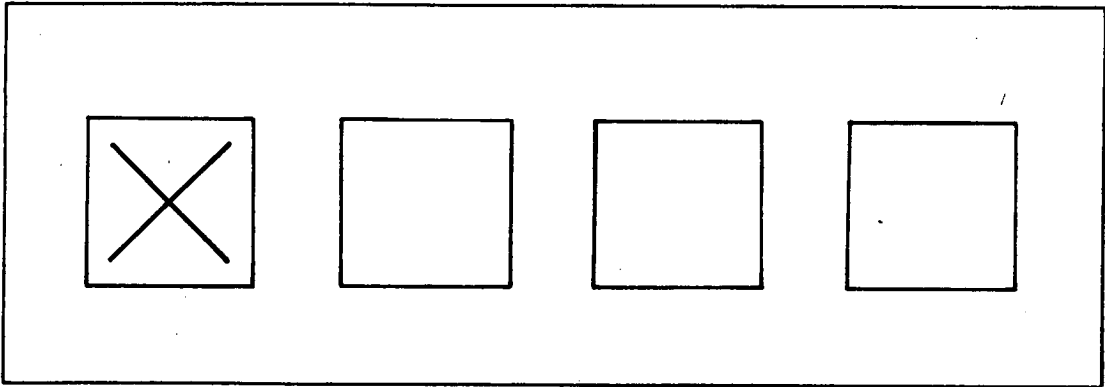
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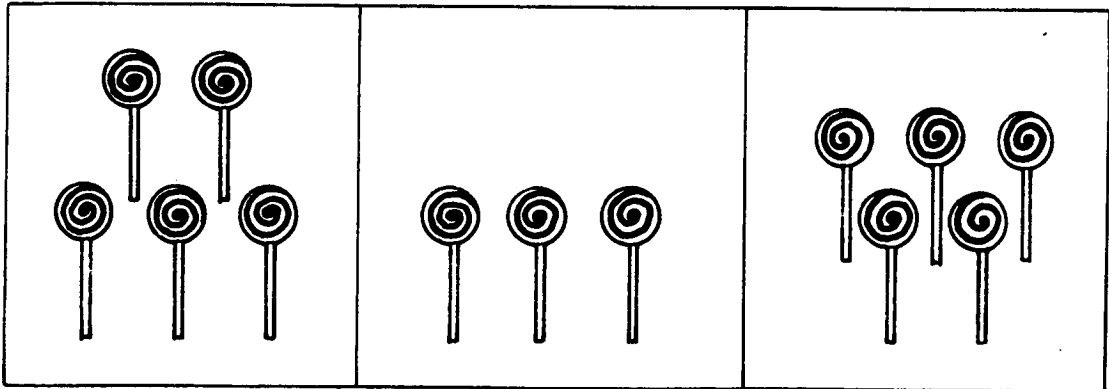
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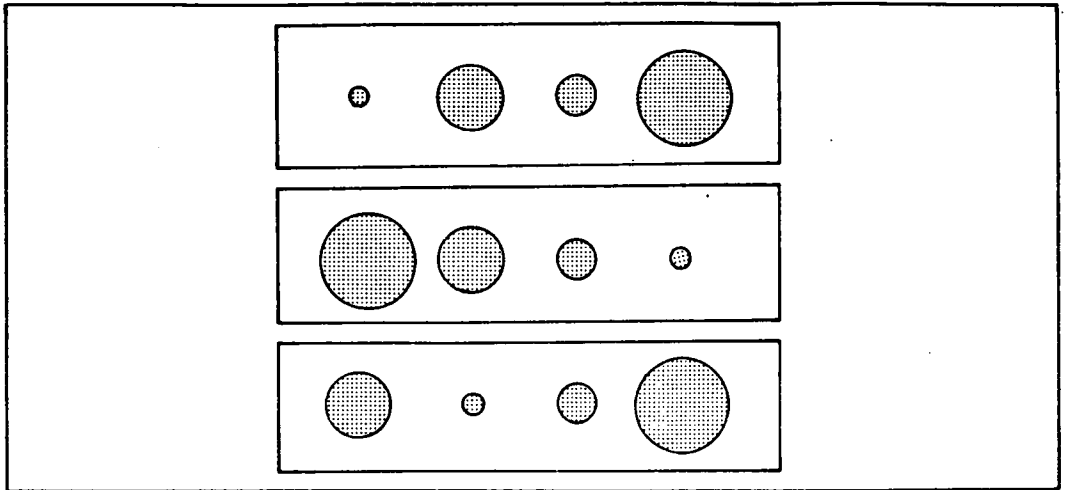


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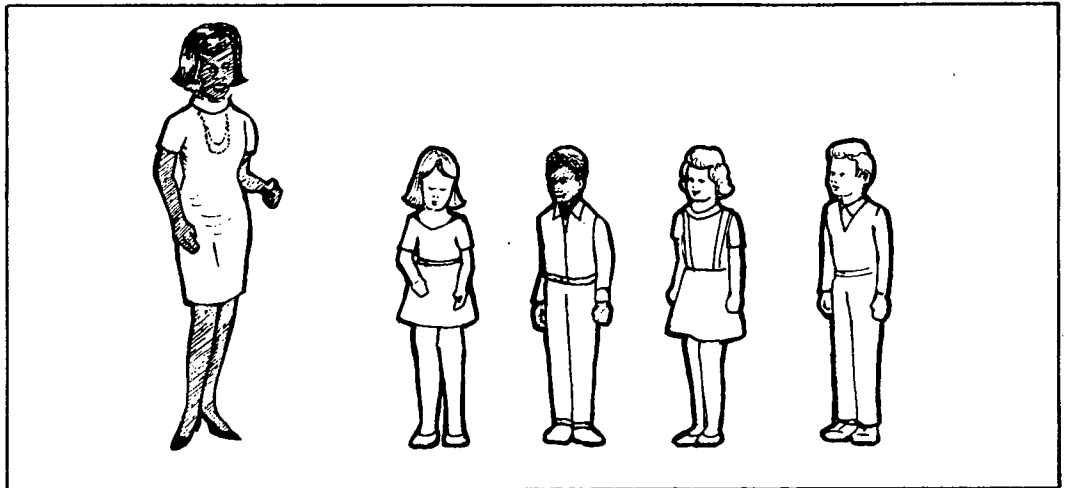


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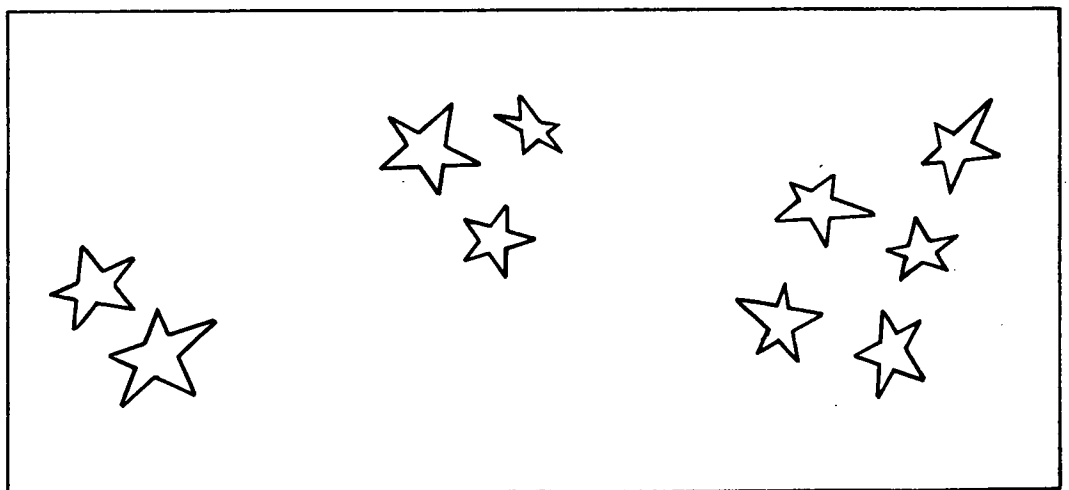




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